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Cardiology

Triglycerides as Determinants of Global Lipoprotein-derangement: Implications for Cardiovascular Prevention

Raj K Gupta, Anand Agrawal, Suman Gupta, Parkhi Gupta

Assistant Professor, FH Medical College, Agra, and Consultant, Department of Preventive and Clinical Cardiology, Agra Medicity Hospital, Agra, Uttar Pradesh, India; Ex-assistant Professor, Department of Cardiology, Jawaharlal Nehru Medical College, Ajmer, Rajasthan, India; Assistant Professor, Sarojini Naidu Medical College, Agra, Uttar Pradesh, India; Student, Government Autonomous Medical College, Firozabad, Uttar Pradesh, India

Despite optimal LDL-C reduction with statin-based therapy, significant residual cardiovascular risk remains.[1] Increasing evidence underscores the role of triglycerides (TG) and TG-rich lipoproteins (TRLs) as independent and causal mediators of atherosclerotic cardiovascular disease (ASCVD).[2] Elevated TGs are strongly associated with an atherogenic lipid profile characterized by low HDL-C, small dense LDL particles, and remnant cholesterol, all of which amplify vascular risk.[3]

Objective: To highlight the role of triglycerides in global lipoprotein metabolism disruption and explore their implications for refining cardiovascular prevention strategies.

Methods: Review of epidemiological and clinical data on TG as an independent risk factor, combined with evidence from studies in type 2 diabetes, metabolic syndrome, and familial combined hyperlipidemia populations.

Results:

- Elevated TG levels consistently associate with an atherogenic lipid triad: low HDL-C, small dense LDL particles, and increased remnant cholesterol, which collectively amplify vascular risk.[3]
- Risk estimates from multiple cohorts demonstrate nearly twofold increased risk of cardiovascular events in individuals with TG >150 mg/dL, particularly in metabolic and diabetic populations.[4]
- TG-induced lipoprotein remodeling leads to the accumulation of ApoB-containing particles and promotes arterial lipid retention and inflammation.[5]
- Insulin resistance exacerbates TG burden and global lipoprotein derangements.[6]
- Therapeutic strategies, including lifestyle interventions (diet, exercise, weight control) and pharmacologic options (omega-3 fatty acids, fibrates, and novel ApoC-III/ANGPTL3 inhibitors) show promise in addressing residual risk.[7]

Conclusion: Triglycerides are central players in global lipoprotein metabolism whose dysregulation extends the concept of atherogenic dyslipidemia beyond LDL-C. Targeting TG-driven pathways holds potential to close the gap in residual cardiovascular risk, thereby advancing prevention efforts beyond LDL-centric paradigms.

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Evaluation of Lipid Profile and Lipoprotein (A) Levels in Young Patients with Acute Coronary Syndrome at a Secondary Care Centre in Kanniyakumari District

M Praveen, J Ranjit, J Chandrakumar, A Vijay

Department of General Medicine, Dr Jeyasekharan Hospital and Nursing Home, Nagercoil, Tamil Nadu, India

Background: Acute coronary syndrome (ACS) in young patients (<45 years) is an emerging concern. Lipoprotein(a) [Lp(a)], a genetically determined lipoprotein with pro-atherogenic and pro-thrombotic properties, is linked to premature coronary artery disease (CAD). However, data from young Indian patients remains limited.

Objective: To assess lipid profile and Lp(a) levels in ACS patients <45 years and evaluate their association with angiographic severity of CAD.

Methods: A single-center prospective study over 18 months enrolled patients <45 years admitted with ACS. Clinical and risk factor data were recorded. Lipid profile and Lp(a) were measured. Coronary angiogram findings were correlated with Lp(a) levels.

Results: Among 38 patients. Lp(a) values varied across vessel severity groups. Using ≥ 50 mg/dL as abnormal, results are summarized below:

Vessel severity	*Normal LP (a) (<50 mg/dL)*	*Abnormal LP(a) (≥50 mg/dL)*	*Mean LP(a) (mg /dL)*
SVD	21	6	27.84
DVD	2	2	52.86
TVD	5	0	24.48
Normal coronary	1	1	33.58

Despite higher mean Lp(a) in DVD patients, no significant correlation was found between Lp(a) and vessel severity (p =0.99).

Conclusion: In young ACS patients, Lp(a) levels did not significantly correlate with angiographic severity, likely due to the small sample size. However, elevated Lp(a) in some subgroups suggests a role in premature CAD. Routine Lp(a) screening may help early risk detection. Larger studies are needed to clarify its role in the Indian population.

Triglyceride Glucose Index as a Surrogate Marker of Coronary Artery Disease Risk Assessed by Coronary Artery Calcium Score

Y Shaikh, Z Siddiqi, T Khan

Resident, Department of Medicine Era's Lucknow Medical College and Hospital; Professor, Department of Medicine Era's Lucknow Medical College and Hospital

Introduction: There has been increasing evidence demonstrating that IR (Insulin Resistance) contributes to the development of CVD in diabetic as well as non-diabetic subjects. Although it is currently frequently used, the HOMA-IR(Homeostasis Model Assessment of Insulin Resistance) index, which measures β-cell function and IR, is not very useful in people undergoing insulin therapy or those without functional beta cells. The TyG(Triglyceride Glucose) index was created to overcome this restriction and has been demonstrated to be more effective than HOMA-IR in determining IR in people with and without diabetes. This study was planned with the aim of studying the Triglyceride Glucose index as a surrogate marker that can be used to predict subclinical Coronary Artery Disease as assessed by CACS in individuals without prior CVD.

Methodology: This was an observational prospective study carried out over a period of 24 months involving 100 patients aged 18 years of either gender presenting to medicine and cardiology with symptoms suggestive of stable/unstable angina without a past history of MI/stroke. History and clinical examination were performed for CV risks and comorbidities, and blood samples (fasting lipid profile, FBS, HbA1C) and other relevant investigations were carried out. The TyG index was calculated as follows: Ln [(serum triglycerides (F) mg/dL × serum glucose (F) mg/dL)/2], where Ln = natural logarithm. CACS (coronary calcium score) was estimated in the radiology department. Correlation of TyG levels with CACS was studied.

Results: The majority of patients were within the 55–64 years age group, with a nearly equal representation of males (52.0%) and females. The lack of statistical significance suggested that sex may not be a major determinant of CAD risk as assessed by CAC score. Among individuals with T2DM (Type 2 Diabetes Mellitus), the mean TyG index showed a slight increase with CAD risk severity, ranging from 9.48 ± 0.63 in the mild risk group to 10.48 in the severe risk group. Based on the CAC score, 52.0% of individuals had no evidence of CAD. CACS demonstrated a significant positive correlation with FBS (r = 0.336, p = 0.001) and TyG (r = 0.240, p = 0.016), indicating that higher TyG and FBS levels are associated with increased coronary artery calcification. HbA1c, PPBS, TC, TG, LDL, and VLDL showed weak or nonsignificant correlations with CACS. BMI had no significant correlation with CACS (r = –0.008, p = 0.934), suggesting that obesity alone may not be a strong predictor of coronary calcification.

Conclusion: As assessed by the CAC scores, patients with diabetes and hypertension are more likely to have a higher CAD risk. Individuals with diabetes tend to have a significantly higher TyG index compared to those without diabetes. CACS demonstrated a significant positive correlation with FBS and TyG,

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indicating that higher TyG and FBS levels are associated with increased coronary artery calcification.

A Clinical Study on Role of Serum Uric Acid Levels in Patients With Coronary Artery Disease

Adarsh Brahmaiah Chowdary G
GEMS and Hospital, Srikakulam, Andhra Pradesh, India

Introduction: Serum uric acid has been implicated in coronary artery disease through endothelial dysfunction, oxidative stress, and inflammation that promote atherosclerosis. Elevated Serum uric acid levels have been associated with greater CAD severity, plaque burden, and adverse cardiovascular outcomes. However, its independent role as a risk factor remains uncertain. This study aimed to evaluate the association between Serum uric acid levels and angiographically confirmed CAD.
Materials and methods: This analytical descriptive study was conducted in the Department of General Medicine at GEMS Hospital, Srikakulam, Andhra Pradesh, over 1 year, among 50 patients with CAD confirmed by coronary angiography. Demographic and clinical data, including hypertension, diabetes, smoking, and lipid profile, were recorded. Serum uric acid was measured using an enzymatic uricase-based assay and its association was evaluated considering p <0.05 as significant. Other investigations included serum creatinine, CRP, ECG, and 2D Echocardiography. Statistical analysis was performed using SPSS version 20.
Results: Among 50 patients (mean age 57.5 ± 12.9 years; 62% males), elevated serum uric acid levels (8.35 ± 1.55 mg/dL) were significantly associated with multi-vessel coronary involvement (66.7%), reduced ejection fraction (37.9%), recurrent angina (31%), and higher in-hospital major adverse cardiac events (MACE, 41.4%). Logistic regression identified elevated Serum uric acid as an independent predictor of adverse outcomes (OR =3.48, p =0.03).
Conclusion: Elevated Serum uric acid levels show a strong association with the presence, severity, and adverse outcomes of CAD. Hyperuricemia correlated with multi-vessel disease, reduced ejection fraction, and higher MACE rates, establishing SUA as a simple, cost-effective biomarker for CAD risk stratification, prognosis, and early management.

Prognostic Impact of High-sensitivity C-reactive Protein (Hs-CRP) at Admission in Acute Myocardial Infarction Patients: A Cross-sectional Study from a Tertiary Care Center in South India

Yaramala Sailaja Reddy, Kommanaboyina Thirumala Babu, Yadati Sathyanarayana Raju, Jumana Hussain
Junior Resident, Department of General Medicine, Nizams Institute of Medical Sciences, Hyderabad, Telangana; Senior Resident, Department of General Medicine, Nizam's Institute of Medical Sciences; Professor, Department of General Medicine, Nizam's Institute of Medical Sciences; Additional Professor, Department of General Medicine, Nizam's Institute of Medical Sciences

Background: Inflammation plays a pivotal role in the initiation, progression, and complications of atherosclerotic coronary artery disease (CAD). Acute myocardial infarction (AMI) represents the clinical culmination of an inflammatory process that destabilizes atherosclerotic plaques, leading to thrombosis and myocardial necrosis. High-sensitivity C-reactive protein (Hs-CRP) is an acute-phase reactant synthesized by the liver under interleukin-6 stimulation. Beyond its role as a systemic inflammatory marker, Hs-CRP has emerged as a predictor of cardiovascular risk, infarct size, and mortality. Several studies have linked elevated admission Hs-CRP levels to higher rates of complications such as arrhythmias, left ventricular (LV) dysfunction, and acute kidney injury (AKI) post-AMI. However, Indian data on the prognostic significance of Hs-CRP in acute myocardial infarction are scarce, especially regarding its interaction with diabetes mellitus and other comorbidities. This study aims to evaluate the prognostic value of Hs-CRP measured at hospital admission as a predictor of in-hospital morbidity and mortality in patients with acute myocardial infarction and to explore its relationship with diabetic status and metabolic control.
Objectives: *Primary objective:* To correlate the admission Hs-CRP level with hospital mortality and morbidity (length of stay, LV dysfunction, arrhythmias, AKI) among patients with acute myocardial infarction. *Secondary objective:* To assess the prognostic impact of Hs-CRP in diabetic versus non-diabetic AMI patients.
Materials and methods: *Study design and setting:* A cross-sectional analytical study was conducted at the Departments of General Medicine and Cardiology, Nizam's Institute of Medical Sciences, Hyderabad, from 2024 to 2025. The study included consecutive patients admitted with a diagnosis of acute myocardial infarction (STEMI or NSTEMI) confirmed by clinical presentation, ECG findings, and elevated cardiac biomarkers (CK-MB, troponin I/T).
Sample size: A total of 100 patients were enrolled. The sample size was determined with 90% statistical power and a 5% alpha error, based on an anticipated mean Hs-CRP difference of 1.3 mg/L (SD =1.8) between outcome groups.
Inclusion criteria:
1. Adults aged >18 years with confirmed STEMI or NSTEMI as per WHO criteria.
2. Willingness to participate and provide informed consent.
3. Known diabetics or non-diabetics identified at admission.

Exclusion criteria:
- Chronic renal failure or chronic inflammatory conditions
- Recent infections, trauma, or surgery (<3 months)
- Neoplastic or autoimmune diseases
- Reinfarction within 3 months

Data collection: All participants underwent detailed clinical evaluation and laboratory investigations, including:
- Hs-CRP levels at admission (measured using high-sensitivity immunoturbidimetric assay)
- Cardiac biomarkers (CK-MB, troponin)
- Fasting glucose, HbA1c, renal and liver function tests
- ECG and echocardiography for LV ejection fraction (LVEF)
- Urine output and serum creatinine for AKI assessment.

Hs-CRP levels were categorized as:
- Low risk: <1 mg/L
- Intermediate risk: 1–3 mg/L
- High risk: >3 mg/L

Outcomes assessed
1. Primary outcomes: In-hospital mortality, LV dysfunction (LVEF <40%), arrhythmias, AKI, and duration of hospital stay.
2. Secondary outcomes: Association of Hs-CRP with diabetes mellitus, HbA1c, and leukocytosis.

Statistical analysis: Continuous variables were expressed as mean ± SD; categorical variables as proportions. Independent *t*-tests, Chi-square tests, and Spearman correlations were used. A *p*-value <0.05 was considered statistically significant.
Results: *Demographic profile:* Out of 100 patients, 68 were male (68%) and 32 female (32%), with a mean age of 56.7 ± 11.8 years. The most common risk factors included hypertension (62%), diabetes mellitus (48%), and smoking (32%).
***Hs-CRP* Distribution:** The mean admission Hs-CRP level was 61.5 ± 32.4 mg/L, with values ranging from 5.6 to 182 mg/L.
- High Hs-CRP (>3 mg/L): 84% of patients
- Intermediate (1–3 mg/L): 10%
- Low (<1 mg/L): 6%

This distribution indicates a marked inflammatory response in the majority of AMI patients at presentation.
Association with clinical outcomes:
- Hospital mortality: Observed in 12% of patients; mean Hs-CRP in this group was 122.6 ± 24.3 mg/L, significantly higher than in survivors (53.2 ± 27.8 mg/L, p <0.001).
- LV dysfunction: Present in 48%; mean Hs-CRP 78.9 ± 31.5 mg/L vs 44.7 ± 20.1 mg/L in those with preserved LV function ($p = 0.002$).
- Arrhythmias: Noted in 20%; mean Hs-CRP 85.2 ± 33.4 mg/L vs 54.1 ± 24.6 mg/L ($p = 0.021$).
- AKI: Occurred in 18%; mean Hs-CRP 101.3 ± 37.6 mg/L vs 54.9 ± 23.3 mg/L ($p = 0.004$).
- Length of hospital stay: Patients with Hs-CRP >60 mg/L had an average stay of 9.3 ± 3.1 days vs 5.7 ± 2.2 days in those with lower values ($p = 0.011$).

Diabetes and inflammation:
- Diabetic AMI patients ($n = 48$) had significantly higher Hs-CRP (mean 85.3 ± 27.5 mg/L) compared to nondiabetics (44.8 ± 19.7 mg/L, $p < 0.001$).
- HbA1c >6.5 correlated with higher Hs-CRP ($r = 0.41$, $p = 0.036$). This suggests poor glycemic control potentiates the inflammatory milieu, increasing myocardial injury and complications.

Gender and hypertension: Females had marginally higher mean Hs-CRP levels (63.09 mg/L) compared to males (60.38 mg/L), though not statistically significant ($p = 0.609$). Hypertensive patients had higher Hs-CRP (65 mg/L) compared to normotensives (47 mg/L), but the difference was not significant ($p = 0.495$).
Leukocytosis: Patients with leukocytosis showed a significantly higher median Hs-CRP (117.9 mg/L) versus 34.2 mg/L in those without ($p = 0.001$), reinforcing that systemic inflammation and elevated white cell count jointly predict adverse outcomes.
Discussion: This study demonstrates a strong and independent relationship between elevated admission Hs-CRP levels and poor in-hospital outcomes in patients with acute myocardial infarction. Inflammation as a prognostic marker: Hs-CRP reflects systemic inflammatory activation beyond myocardial necrosis. The findings align with studies by Anzal et al. (1997) and Lagrand et al. (1997), which established CRP as a marker of infarct expansion, mechanical complications, and mortality independent of infarct size. Our data confirm that Hs-CRP not only mirrors the extent of myocardial injury but also predicts complications like LV dysfunction and arrhythmias, probably due to inflammation-mediated myocardial remodeling and electrical instability.
Diabetes and Hs-CRP: The robust correlation between high Hs-CRP and poor glycemic control (HbA1c >6.5%) highlights the interplay between chronic metabolic inflammation and acute ischemic injury. This supports findings by Pradhan et al. and Rutter et al., who reported higher Hs-CRP and endothelial dysfunction in diabetics. Comparative analysis: Our results are comparable

to those of Ridker et al. (2000) and Sesso et al. (2003), which identified elevated Hs-CRP as a marker of increased risk for coronary events and hypertension. However, this study extends those observations by demonstrating that admission Hs-CRP levels can stratify early in-hospital risk in Indian AMI patients—a population often burdened with earlier onset and multi-risk comorbidities.

Clinical implications:

- Admission Hs-CRP can serve as a rapid, inexpensive bedside biomarker for identifying high-risk AMI patients requiring closer hemodynamic and renal monitoring.
- Incorporating Hs-CRP in routine AMI evaluation may guide early initiation of anti-inflammatory and cardioprotective therapies, particularly in diabetics.
- It reinforces the concept that AMI is not merely a thrombotic event but also a systemic inflammatory syndrome.

Limitations: This study's cross-sectional design precludes long-term prognostic assessment beyond hospital discharge. Serial Hs-CRP measurements could provide further insight into post-infarct inflammatory kinetics. The absence of follow-up data on reinfarction or heart failure progression is another limitation.

Conclusions: Elevated Hs-CRP at hospital admission is a powerful prognostic marker of morbidity and mortality in acute myocardial infarction. It correlates with the severity of cardiac dysfunction, arrhythmias, and renal impairment. The inflammatory burden is significantly higher in diabetic and poorly controlled patients, reinforcing the need for metabolic optimization in CAD prevention and management. Hs-CRP testing should be integrated into the standard risk assessment of AMI patients at tertiary centers, especially in resource-limited Indian settings where simple biomarkers can significantly aid clinical decision-making.

Key findings:

- Mean Hs-CRP at admission: 61.5 mg/L
- Mortality rate: 12%; highest mean Hs-CRP 122 mg/L
- Strong correlation with LV dysfunction, AKI, and prolonged hospital stay
- Diabetic patients had nearly double the Hs-CRP of non-diabetics
- Suggests inflammatory-metabolic synergy in AMI progression

Keywords: Acute myocardial infarction, Diabetes mellitus, High-sensitivity C-reactive protein, Inflammation, Left ventricular dysfunction, Morbidity, Mortality, Prognostic biomarker

Sociodemographic and Clinical Profile of Patients Presenting With Acute Decompensated Heart Failure in a Tertiary Care Hospital

G Burman, C Sheikh, D Bandyopadhyay, A Adhikary

Department of General Medicine, North Bengal Medical College, Siliguri, West Bengal, India; Junior Resident, Department of General Medicine, North Bengal Medical College, Siliguri, West Bengal, India; Professor, Department of General Medicine, North Bengal Medical College, Siliguri, West Bengal, India; Assistant Professor, Department of General Medicine, North Bengal Medical College, Siliguri, West Bengal, India

Introduction: Heart failure (HF) is a major public health issue, and acute decompensated heart failure (ADHF) is a leading cause of hospitalization, morbidity, and mortality worldwide. In India, HF occurs 10–15 years earlier than in Western countries, often complicated with hypertension, diabetes, smoking, and anemia. North Bengal, with its rural and semi-urban population and limited healthcare resources, faces unique challenges. Understanding the socio-demographic and clinical profile of ADHF patients in this region is crucial for improving management and outcomes.

Methodology: This was a hospital-based observational study conducted from July 2024 to June 2025. A total of 100 adults admitted with ADHF were enrolled. Patients with valvular heart disease, congenital heart disease, or ACS were excluded. Data regarding demographics, comorbidities, prior HF history, therapy adherence, drug usage, hospital stay, and in-hospital outcomes were collected and analyzed using descriptive and inferential statistics (SPSS v22).

Results: The mean age of the study population was 59.1±7.6 years; 62% were males. Most patients (88%) resided in rural areas. Mean BMI was 24.2 kg/m^2 and waist circumference 85.7 cm. Comorbidities included anemia (91%), hypertension (33%), and diabetes (25%). Prior HF diagnosis was noted in 40% and 35% had poor medication adherence. Pre-hospitalization drugs included Diuretics (73%), beta blockers (59%), ACE inhibitors (40%), CCBs (22%), MRAs (19%), SGLT2i (16%), and ARNI (11%). Mean hospital stay was 8.1 days; 87% were discharged, and 13% died during hospitalization.

Conclusion: ADHF patients in North Bengal are predominantly middle-aged rural males with high anemia prevalence and suboptimal adherence. Mortality is higher than in Western cohorts. Strengthening rural healthcare, improving access to evidence-based drugs, early screening for comorbidities, and patient education are essential for reducing disease burden and improving survival.

Study of Serum Potassium Level and Its Clinical Outcomes in Acute Decompensated Heart Failure Patients

Madhav Bhardwaj, Vishwanath K, M S Ramaiah Medical College;

Introduction: Electrolyte disturbances, especially dyskalemia, are common in acute decompensated heart failure (ADHF) and have prognostic implications. This study aimed to assess serum potassium levels in ADHF patients on admission and their association with clinical outcomes.

Objectives: To assess serum potassium levels at admission in ADHF patients and study the clinical outcomes in dyskalemic patients.

Inclusion Criteria:

1. Age>18 years
2. Patients admitted with Acute decompensated heart failure.

Exclusion Criteria:

1. Sepsis
2. CKD on chronic dialysis

Methods: A prospective cross-sectional study of 120 ADHF patients was conducted using ACC/AHA 2022 guidelines. Patients were categorized as normokalemic (3.5–5 mEq/L), hypokalemic (<3.5 mEq/L), or hyperkalemic (>5 mEq/L). Outcomes assessed included hospital stay, arrhythmias, and mortality. Data were analyzed using SPSS 22.

Results: Normokalemia was found in 58.3%, hyperkalemia in 30%, and hypokalemia in 11.7% of patients. No significant association was found between potassium levels and age or sex. Hypokalemia was more common in HFpEF; hyperkalemia in HFrEF. Arrhythmias were slightly more frequent in hypokalemia (21.4%) than hyperkalemia (16.7%). Hypokalemia was associated with longer hospital stays (>7 days). Mortality was marginally higher in hypokalemia (14.3%) vs hyperkalemia (11.1%), without statistical significance.

Conclusion: Hyperkalemia at admission may predict in-hospital mortality. Hypokalemia was linked with more arrhythmias and longer hospital stays. Persistent or progressive dyskalemia was associated with poorer outcomes in ADHF, emphasizing the need for close monitoring and correction.

Clinical Pharmacology

Heat before Beat? Temporal Dynamics of Fever and Tachycardia Resolution after Paracetamol: A Prospective Study

Sai Vishnu Battu, Anjaneya Prasad V

Second year Postgraduate, Department of General Medicine, Dr Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation, Krishna, Andhra Pradesh, India; Professor and HOD, Department of General Medicine, Dr Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation, Krishna, Andhra Pradesh, India

Introduction: Fever and tachycardia commonly coexist in systemic infections, with Liebermeister's rule stating that pulse increases by about 10 beats/min for every 1°C rise in temperature. Whether pulse rate normalizes simultaneously with or after fever resolution remains unclear. This study aimed to quantify the time gap between temperature reduction and pulse rate normalization following paracetamol administration.

Materials and methods: A prospective observational study was conducted from March–August 2025 in the Department of General Medicine, Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation. One hundred febrile adults (≥38°C) receiving paracetamol (500–1000 mg orally or 1 gm IV) as the sole antipyretic were enrolled. Vital signs were recorded at baseline, 15, 30, 60, and 120 minutes postdose using calibrated thermometers and pulse measurements (manual/monitor). Patients on beta-blockers, with arrhythmia, shock, heart failure, or recent antipyretic use were excluded. Categorical outcomes were analyzed using the Fisher Chi-square test.

Results: 86 patients showed ≥0.5°C temperature fall; only 61 had ≥10 bpm pulse reduction. Median time to temperature normalization was 60 min (Interquartile range-IQR 30–60), while pulse normalization lagged at 120 min (IQR 60–120). Temperature preceded pulse normalization in 82% of cases, with a median lag of 60 minutes (IQR 30–90, $p < 0.01$). At 60 minutes, 73 patients remained tachycardic despite defervescence. By 120 minutes, 96% had both parameters reduced; 2% showed persistent tachycardia despite temperature normalization. No adverse events occurred.

Conclusion: In febrile adults treated with paracetamol, pulse normalization typically lags about one hour behind temperature reduction. Persistent tachycardia post-defervescence may indicate residual infection or hemodynamic stress. Further multicentric validation is recommended.

Critical Care Medicine

The Role of Absolute Eosinophil Count as a Diagnostic and Prognostic Marker for Sepsis and its Relation with Sequential Organ Failure Assessment/Quick Sequential Organ Failure Assessment Score

Sachin K

Kempegowda Institute of Medical Sciences, Bengaluru, Karnataka, India

Background: Sepsis remains a major cause of morbidity and mortality worldwide, particularly

in low- and middle-income countries. Despite advances in intensive care, early recognition is challenging, and inexpensive biomarkers are needed. Absolute eosinophil count (AEC) has been proposed as a potential diagnostic and prognostic marker.

Objectives: To assess the diagnostic and prognostic role of AEC in sepsis and its correlation with Sequential Organ Failure Assessment (SOFA) and quick SOFA (qSOFA) scores.

Methods: This hospital-based case–control study was conducted at a tertiary care teaching hospital in India over 18 months. A total of 200 adults were enrolled: 100 sepsis cases (Sepsis-3 criteria) and 100 age- and sex-matched non-septic controls. Clinical details, source of infection, AEC, SOFA, and qSOFA were recorded at admission (Day-1), Day-3, and Day-7. Outcomes were documented as survival or mortality. Data were analyzed using chi-square, *t*-test, and Pearson's correlation.

Results: At admission, AEC ≤50 cells/mm^3 was observed in 53% of sepsis cases versus 2% of controls ($p < 0.001$), yielding 98% specificity and 96% positive predictive value. Mean AEC remained significantly lower in sepsis across all days (Day-1: 48.22 ± 20.94 vs 92.56 ± 19.81; $p < 0.0001$). Mortality was higher in patients with persistent eosinopenia (Day-7: 40% vs 23%), though not statistically significant. Correlations with SOFA and qSOFA were weak, except for a modest positive correlation with SOFA on Day-7 ($r = 0.21$, $p = 0.03$).

Conclusion: AEC is consistently reduced in sepsis and offers strong diagnostic value at admission. Its prognostic role is less robust, requiring further multicenter validation.

Combined Utility of Platelet Indices, Procalcitonin, and qSOFA Score in Predicting Sepsis Outcomes: A Prospective Study

G Sachin K

Sri Devraj Urs Medical College, Kolar, Karnataka, India

Background: Sepsis is a leading cause of mortality, especially in low-resource settings where advanced biomarkers are costly. Platelet indices, quick Sequential Organ Failure Assessment (qSOFA) score, and procalcitonin may improve prognostic accuracy.

Methods: A prospective cross-sectional study was conducted over three months in 98 adult patients with sepsis and qSOFA ≥ 2. Clinical evaluation included qSOFA and SOFA scoring. Blood samples were analyzed on days 1 and 3 for platelet indices and procalcitonin. Patients were followed until discharge or death.

Results: Mean age was 54 ± 18 years; mortality was 22.4%. Thrombocytopenia was more frequent in nonsurvivors (68% vs. 25%, $p = 0.002$). Platelet counts declined in nonsurvivors but increased in survivors ($p < 0.001$). Non-survivors had higher MPV (12.3 vs. 11.0 fL, $p = 0.004$) and PDW (13.6 vs. 9.1 fL, $p < 0.001$). Median procalcitonin was elevated in nonsurvivors (4.6 vs 1.4 ng/mL, $p < 0.001$). qSOFA ≥ 2 strongly predicted mortality ($p < 0.001$). ROC AUCs: qSOFA 0.68, procalcitonin 0.75, platelet indices 0.73; combined model 0.85 (sensitivity 86%, specificity 78%).

Conclusion: Platelet indices, when combined with qSOFA and procalcitonin, provide a simple, affordable, and reliable approach to predict sepsis outcomes, supporting their integration into routine practice in resource-limited settings.

Bacteriological Profile and Antibiogram of Isolates from Tracheal Aspirates of Patients on Mechanical Ventilation at a Teaching Hospital in Eastern India

Garai A, Jana B, Ekka R, Chakrabarti D

Junior Resident, Department of Medicine, North Bengal Medical College, Siliguri, West Bengal, India; Assistant Professor, Department of Medicine, North Bengal Medical College, Siliguri, West Bengal, India; Professor, Department of Medicine, North Bengal Medical College, Siliguri, West Bengal, India

Introduction: Hospital-acquired pneumonia (HAP) occurs ≥48 hours after admission, while ventilator-associated pneumonia (VAP) develops ≥48 hours after endotracheal intubation. VAP markedly increases ICU morbidity, hospital stay, and mortality. Identifying pathogens and their antimicrobial susceptibility guides empiric therapy and antibiotic policy. This study aimed to determine the bacteriological profile and antibiotic resistance pattern of isolates from tracheal aspirates of mechanically ventilated patients in a tertiary care hospital in Eastern India.

Methodology: A total of 190 endotracheal aspirates were collected from ICU patients ventilated for >48 hours. Samples were processed by standard microbiological methods. Bacteria were identified using biochemical and automated systems. Antimicrobial susceptibility was tested by Kirby-Bauer disk diffusion as per CLSI 2022 guidelines. Isolates resistant to ≥3 antimicrobial classes were defined as multidrug resistant (MDR). Data were analyzed descriptively.

Results: Of 190 aspirates, 136 (71.5%) showed significant bacterial growth, and 54 (28.4%) were sterile. Klebsiella species. (42.6%) was most common, followed by *Acinetobacter* spp. (32.3%), *Pseudomonas* spp. (22.0%), *E. coli* (1.5%), and *Enterococcus* spp. (1.5%). MDR strains accounted for 32.3% of isolates, mainly *Klebsiella* (17.6%) and *Pseudomonas* (13.2%). Resistance was highest to third-generation cephalosporins, fluoroquinolones, and β-lactam/β-lactamase inhibitor combinations. Carbapenems and colistin retained good activity. Enterococcus spp. remained sensitive to vancomycin and linezolid. Microbial persistence and impaired response to treatment were more frequent when multidrug-resistant organisms were present.

Conclusion: We conclude from this study that *Klebsiella* spp is the most common pathogen contributing to VAP in our institution. Moreover, we established that *Klebsiella, Pseudomonas, Acinetobacter,* and *E. coli* are the most important agents associated with multidrug resistance potential. With more and widespread use of ventilators in Government institutions, our data contributes significant information to the microbial patterns of VAP in Eastern India.

Shock Index for Predicting Postintubation Hypotension in ICU

Yashaswini GU

Kempegowda Institute of Medical Sciences, Bengaluru, Karnataka

Introduction: Endotracheal intubation (ETI) is one of the most crucial tasks for physicians managing an acutely unstable patient in a medical ICU. Hypotension is a frequently encountered complication both during and following emergency intubation. Hence, this study aimed to evaluate the shock index to predict postintubation hypotension (PIH).

Methods: A prospective observational study was conducted among 25 patients requiring emergency endotracheal intubation in medical ICU at a tertiary-care teaching hospital for a period of 6 months from January 2025 to June 2025. PIH was defined as any recorded SBP < 90 mm Hg or mean arterial pressure (MAP) <65 mm Hg within 60 minutes after intubation. Shock index (ratio of heart rate to SBP) was calculated. A *p*-value of < 0.05 was considered statistically significant.

Results: Hypotension after emergent ETI was observed in 7 (28.0%) patients. The median time was 22 minutes to hypotension detected after ETI. The ROC-AUC of the shock index before intubation for prediction of postintubation hypotension was 0.611 (95% CI 0.564–0.657). Patients with PIH were relatively older and had more comorbid diseases. The category of SI ≥1.0 had a likelihood ratio of 2.0 and strongly correlated with the PIH (OR 2.2, 95% CI: 1.1–5.2, $p = 0.012$).

Conclusion: Shock Index is an independent predictor of PIH in patients who need emergency intubation. A cut-off value of the Shock index ≥ 1 has a better ability to predict PIH. Calculation of this index is easy and can serve as a useful tool for preventing hypotension following endotracheal intubation.

Lipid Profile as a Predictor of Mortality in Sepsis: A Hospital-based Observational Study

A Ravi, S Thakur, D Das

Department of General Medicine, Tezpur Medical College and Hospital, Tezpur, Assam, India

Introduction: Sepsis is a critical medical condition marked by an abnormal and overwhelming immune response to infection, frequently resulting in organ dysfunction and high mortality. Despite improvements in intensive care practices, it is one of the leading causes of hospital-related deaths globally due to delayed recognition and a lack of reliable prognostic indicators. Recent studies indicate that alterations in lipid metabolism correlate with sepsis severity and outcomes. This study aims to assess lipid profile changes in sepsis and their role as predictors of mortality.

Methodology: Hospital-based cross-sectional observational study conducted over 1 year. A total of 120 patients diagnosed with sepsis based on qSOFA (quick Sepsis-Related Organ Failure Assessment) criteria were included. Serum lipid profiles, including total cholesterol, HDL-C, LDL-C, and triglycerides, were measured at admission. Clinical outcomes were compared between survivors and non-survivors. Statistical analyses were performed using Chi-square and *t*-tests, with $p < 0.05$ considered significant.

Results: Out of 120 sepsis patients included in the study, 42 patients (35%) expired. Mortality increased with sepsis severity-5% in sepsis,38% in severe sepsis, and 63% in septic shock (*p* value =0.0005). Nonsurvivors had significantly lower total cholesterol ($p < 0.001$) and higher LDL-C and triglyceride levels compared to survivors ($p = 0.04$ and $p = 0.02$, respectively), suggesting a strong association between lipid abnormalities and poor outcomes.

Conclusion: This study highlights that lipid profile alterations, particularly low total cholesterol along with elevated triglyceride and LDL-C, are significantly correlated with sepsis severity and mortality. Routine lipid profile assessment can serve as a simple, cost-effective adjunct for early risk stratification and prognostication in sepsis.

To Assess Lactate/Albumin Ratio in Predicting Mortality in Comparison With SOFA Score in Sepsis

Sri Lalitha Vaishnavi Pulavarthi
Apollo Institute of Medical Sciences and Research

Aim: To assess the Lactate/albumin ratio in predicting mortality in comparison with SOFA score in sepsis.

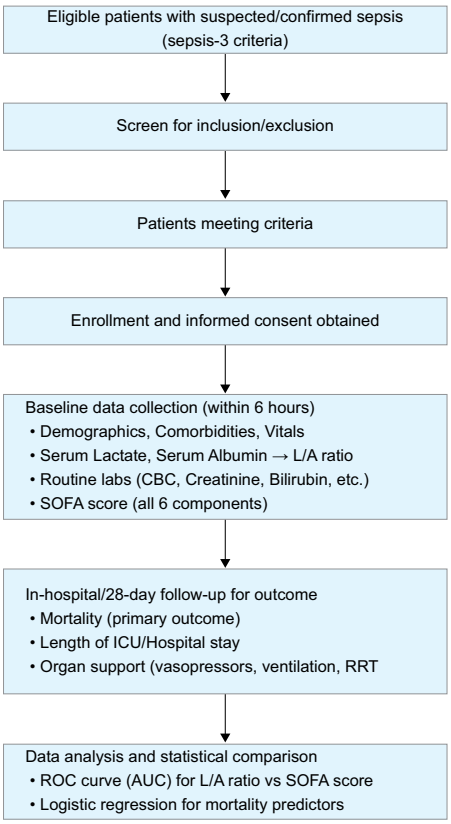
Objective: To measure lactate and albumin, and compare the L/A ratio with the SOFA score as a prognostic marker in predicting mortality in patients with sepsis.

Introduction: Sepsis is a critical and complex clinical syndrome that occurs due to dysregulated immune response to infection, causing life-threatening organ dysfunction. It is one of the common causes of morbidity and mortality globally, affecting millions annually, placing a significant burden on the healthcare system. It is characterized by a rapid progression from infection to systemic inflammation, organ failure, and even death, especially if not promptly treated.

Biomarkers like lactate were traditionally used to gauge tissue hypoxia and severity. Albumin levels serve as indicators of nutritional status and systemic inflammation.

Lactate/albumin ratio (LAR) recently emerged as a superior predictor of mortality and severity compared to lactate or albumin alone. The Sequential Organ Failure Assessment (SOFA) score, which evaluates organ dysfunction across multiple systems, is also a validated and widely used clinical tool to predict sepsis outcomes. Increased LAR levels were associated with increased mortality and organ dysfunction in septic patients. But data regarding its prognostic value in the Indian context are limited. So, this study was undertaken.

Methodology:

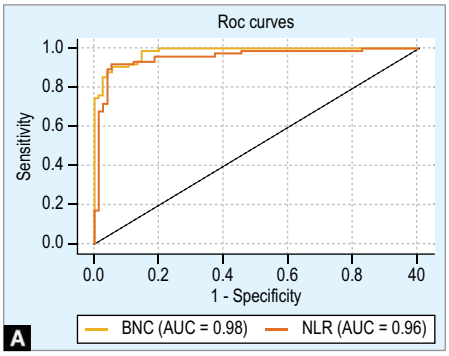


Results

ROC Curve: AUC is 0.97 for LAR in predicting mortality.

Mortality (28-day)	*Valid N (listwise)*
Positive a	36
Negative	64

a. The positive actual state is 1



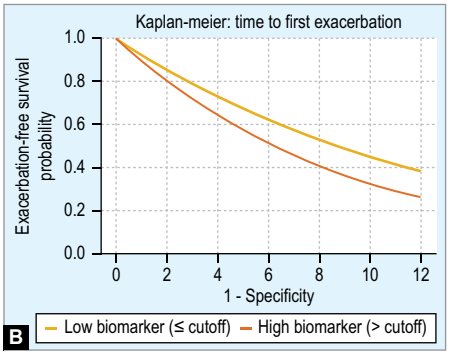
Test Result Variable(s)

Test Result Variable(s):Lactate/Albumin Ratio				
Area	*Std Error*[a]	*Asymptotic Sig*[b]	*Asymptotic 95% confidence interval*	
			Lower bound	*Upper bound*
0.975	0.022	0.000	0.000	1.000

ROC: AUC is 0.972 for SOFA in predicting mortality

Mortality (28-day)	*Valid N (list-wise)*
Positive[a]	36
Negative	64

[a]The positive actual state is 1



Area under the curve				
Test result variable(s): Total SOFA				
Area	*Std Error*	*Asymptotic Sig*	*Asymptotic 95% confidence interval*	
			Lower bound	*Upper bound*
0.972	0.016	0.000	0.937	1.000

Conclusion: In this study of 100 critically ill patients with sepsis and septic shock, the mean age was 57.6 years, with a male predominance (63%). Most cases were due to septic shock secondary to pneumonia and urosepsis. Around 50% patients required vasopressor support, which was significantly associated with higher mortality ($p < 0.001$). Nonsurvivors had higher SOFA scores, lactate/albumin ratios, and bilirubin levels, and lower PaO_2/FiO_2 and GCS values compared to survivors. Both the lactate/albumin ratio and total SOFA score showed excellent prognostic accuracy for predicting 28-day mortality, with AUC values of 0.975 and 0.972, respectively. These findings confirm that metabolic derangement and multi-organ dysfunction strongly predict adverse outcomes in sepsis.

Diabetology

Determination of SRPA and Adiposity Measures and its Association with Glycemic Status in Type 2 Diabetics Having High Mean HbA1c in a Private Clinic of a City in West India

Jayesh D Solanki, Rahul Vaghasiya, Isha Sharma, Jagdish B Patel
Department of Physiology, Government Medical College, Bhavnagar, Gujarat, India; Department of Medicine, Government Medical College, Bhavnagar, Gujarat, India ; Department of Medicine, Government Medical College, Bhavnagar, Gujarat, India; Department of Medicine, Government Medical College, Bhavnagar, Gujarat, India

Introduction: Indian type 2 diabetics (T2D) are known for poor disease control, on which self-reported physical activity (SRPA) and optimum body composition have a positive impact. We determined prevalence of SRPA and general/visceral obesity and its impact on HbA1c-based glycemia.

Methodology: A cross-sectional study was conducted on 200 T2Ds in a private clinic, and HbA1c-based glycemic status, WHO questionnaire-based SRPA, BMI-based general obesity, and bipolar bioelectrical impedance-based visceral obesity were evaluated. SRPA and obesity were compared and associated with glycemic status, keeping mean HbA1c as a cutoff.

Result: Mean age, male%, mean duration of T2D, mean BMI, mean HbA1c, and SRPA prevalence were 54 years, 42.5%, 4.82 years, 25.49, 8.69%, and 61.5%, respectively. Comparison of groups based on either SRPA or BMI (cutoff 25) showed better HbA1c with the presence of SRPA and BMI <25. Physical inactivity-imposed odds risk of 3.44 for visceral fat (VF) ≥10% and odds risk of 2.6 for more than mean HbA1c with statistical significance. VF ≥10% imposed odds risk of 4 for higher than mean HbA1c. Physical inactivity and visceral obesity together imposed a one-third prevalence of better glycemic value, while physical activity and controlled visceral obesity yielded ¾th prevalence of good glycemic value.

Conclusion: In T2D with poor glycemic status and moderately prevalent physical activity, we found a strongly significant association of SRPA and controlled body adiposity with HbA1c-based glycemic status. It reaffirms physical activity and control of central obesity as forerunners of better glycemic status and calls for further studies with vertical follow-up.

Keywords: Adiposity; HbA1c; physical activity; type 2 diabetes mellitus; visceral obesity.

An Observational Study of Dyslipidemia in Diabetes Patients as a Risk Factor in Heart Disease

Chama Yadavendra Reddy
Malla Reddy Institute of Medical Sciences, Hyderabad, Telangana, India

Background and aims: Atherosclerotic cardiovascular disease (ASCVD) is a major cause of morbidity and mortality in both men and women with T1DM and T2DM. In patients with T1DM in good glycemic control, the lipid profile is very similar to the general population. In contrast, in patients with T2DM, even with good glycemic control, there are frequently lipid abnormalities (elevated TG and non-HDL-C, decreased HDL-C, and an increase in small dense LDL). In both T1DM and T2DM, poor glycemic control increases TG levels and decreases HDL-C levels with modest effects on LDL-C levels. Dyslipidemia is common in diabetes, and there is strong evidence that cholesterol-lowering improves cardiovascular outcomes, even in patients with apparently unremarkable lipid profiles. our study aims at studying the dyslipidemia levels and prognosticating the cardiac risk.

Materials and methods: The present prospective observational study was done in a tertiary care hospital from February 2024 to February 2025. A total of 70 patients were collected, and all routine investigations were done. patients were fasted for lipid profile, and various entities in lipid profile were assessed.

Inclusion criteria: (1) all patients above 18 years; (2) all patients with diabetes; (3) All patients with abnormal TGL, LDL, HDL, and total cholesterol.

Exclusion criteria: (1) All patients with previous cardiac disorders, (2) All patients with previous dyslipidemia disorders

Results: In our study, out of 70, we had a female preponderance, 36 females and 34 males. In our study, we had three patients between 20 - 30 years; 8 patients between 30 - 40 years; 13 patients between 40 - 50 years; 23 patients between 50 - 60 years; 16 patients between 60 - 70 years; 7 patients greater than 70 years.in our study, we had 20 patients with DM duration <5 years; 43 patients with dm duration 5 - 10 years; 5 patients with DM duration greater than 10 years, with diabetes type 2 were *de novo*. We observed dyslipidemia in patients with a duration of diabetes between 5 and 10 years of diabetes.

Conclusion: It is observed in our study that the duration of diabetes influenced the dyslipidemia in patients. Hence, we prognosticated that they are more prone to cardiac disorders.

Basal-bolus Insulin Therapy Effectively Lowers Maternal Triglyceride Levels in Cases of Gestational Diabetes without Affecting the Activity of Cholesteryl Ester Transfer Protein

Md Dilawez Shamim, Noor Ul Sabah Mumtaz
Department of Medicine, Rasha Health Care, Sitamarhi, Bihar, India; Department of Gynecology and Obstetrics, Rasha Health Care, Sitamarhi, Bihar, India

Aim: Macrosomia in offspring of mothers who are obese or overweight, diagnosed with glucose-controlled gestational diabetes mellitus (GDM) results from an anomalous increase in maternal triglyceride (TG) levels. Our objective was to determine whether basal-bolus insulin therapy (BBIT) or other therapeutic elements can effectively lower triglyceride levels in individuals with GDM.

Methods: We conducted an analysis of the records pertaining to 262 singleton pregnancies diagnosed with gestational diabetes mellitus (GDM) utilizing stepwise multiple linear regression, as well as the $\chi 2$, Jonckheere, Terpstra, and Mann–Whitney statistical tests. As triglyceride levels in mothers rose progressively throughout the course of a normal gestation, they were subsequently transformed into z-scores. Cholesteryl ester transfer protein activity was measured using the atherogenic index of plasma (AIP).

Results: The research indicated that BBIT, a nutritional intervention, markedly influenced maternal triglyceride z-scores during pregnancy in 262 cases of gestational diabetes mellitus (GDM). The BBIT group exhibited a higher pre-pregnancy BMI and received metformin prescriptions more frequently. Nonetheless, triglyceride z-scores fell more markedly in the BBIT group.

Conclusion: BBIT, excluding control of gaining weight and metformin, decreased maternal triglycerides in women with glucose-controlled gestational diabetes mellitus.The advantageous impact of BBIT was not associated with alterations in the activity of cholesteryl ester transfer protein.

Keywords: Basal bolus insulin, Gestational diabetes mellitus, Lipoprotein, Triglycerides.

Association of non-insulin based indicators of insulin resistance and HbA1c in patients with type 2 Diabetes Mellitus

Abhilasha Kapoor, Manish Chugh
Junior Resident, General Medicine, Government Multispeciality Hospital Sector 16, Chandigarh; Medical Officer, General Medicine, Government Multispeciality Hospital Sector 16, Chandigarh, India

Introduction: Diabetes mellitus is a metabolic disorder marked by chronic hyperglycemia, with type 2 diabetes mellitus (T2DM) contributing to high morbidity and mortality worldwide. India faces a rapid rise in T2DM at younger ages, raising cardiovascular risk. Insulin resistance (IR) is central to T2DM, but insulin assays are seldom available in primary care. Non-insulin-based indices like the Triglyceride-glucose index (TyG) and TG/HDL-C ratio provide practical alternatives. This study assessed correlations of these indices with glycated hemoglobin (HbA1c) in patients with T2DM.

Methodology: A cross-sectional study of 120 adults with recent-onset T2DM was conducted in the Department of General Medicine, Government Multispecialty Hospital, Chandigarh. Non-insulin-based IR indices included TyG, TyG-Body Mass Index (TyG-BMI), TyG-Waist Circumference (TyG-WC), TyG-Neck Circumference (TyG-NC), TyG-Neck-to-Height Ratio (TyG-NHtR), TG/HDL-C, Metabolic Score for Insulin Resistance (METS-IR), and Visceral Adiposity Index (VAI). Associations with HbA1c were analyzed using Pearson correlation, with $p < 0.05$ considered significant.

Results: Mean age was 52.7 (±11.1) years; 59 (49%) were male and 61 (51%) female. Mean HbA1c was 8.25 (±1.44)%. Among indices, TyG ($r = 0.426$, $p < 0.001$), TyG-BMI ($r = 0.473$, $p < 0.001$), TyG-WC ($r = 0.503$, $p < 0.001$), TyG-NC ($r = 0.534$, $p < 0.001$), TyG-NHtR ($r = 0.511$, $p < 0.001$), and METS-IR ($r = 0.347$, $p < 0.001$) showed significant positive correlations with HbA1c. TG/HDL-C, VAI, and gender showed no association.

Conclusion: Non-insulin-based IR markers, especially TyG derivatives, strongly correlate with HbA1c in recent-onset T2DM. Their combined use offers practical, cost-effective tools for risk stratification and glycemic monitoring where insulin assays are unavailable. Incorporating TyG indices into routine screening and validating them across populations may improve outcomes.

Keywords: T2DM, Insulin Resistance, HbA1c, TyG Index, Non-Insulin Markers.

Correlation of Vitamin B12 Deficiency with Peripheral Neuropathy in Type 2 Diabetes Mellitus: A Cross-sectional Study at ESIC MCH, BIHTA

Priyank Verma, Rajesh Kumar, Vivek Kumar, Amrendra Prasad Singh
Department of General Medicine, ESIC Medical College and Hospital (MCH), Bihta, Bihar, India

Background: Peripheral neuropathy is a prevalent microvascular complication in Type 2 Diabetes Mellitus (T2DM), often resulting in significant disability. Vitamin B12 deficiency may exacerbate neuropathy; however, its role in diabetic peripheral neuropathy (DPN) remains under-recognized in clinical practice.

Objective: To assess the correlation between vitamin B12 deficiency and peripheral neuropathy in T2DM patients, using clinical examination, the Michigan Neuropathy Screening Instrument (MNSI), and Nerve Conduction Velocity (NCV) studies.

Methods: A cross-sectional study was conducted on 20 patients with T2DM attending the outpatient department at ESIC Medical College and Hospital (MCH), Bihta. Serum vitamin B12 levels were measured. Peripheral neuropathy was assessed through detailed clinical examination, MNSI scoring, and NCV studies. Patients were categorized into vitamin B12-deficient and non-deficient groups, and the presence and severity of neuropathy were compared between groups.

Results: Among the 20 patients,[4] (20%) were found to have vitamin B12 deficiency. Neuropathy was present in 4 (100%) patients, with higher prevalence and severity in the B12-deficient group. NCV studies revealed more pronounced axonal and demyelinating changes in those with low B12 levels. A significant association was observed between vitamin B12 deficiency and the presence of neuropathy.

Conclusion: The study indicates a positive correlation between vitamin B12 deficiency and peripheral neuropathy in T2DM patients, supported by clinical, MNSI, and NCV findings. Routine screening for vitamin B12 levels may aid in the early detection and management of diabetic neuropathy.

Parameter	*Vitamin B12 ≤ 300 (n =9)*	*Vitamin B12 > 300 (n =11)*	*Mean difference*	*p-value*	*Significance*
Age (years)	48.00±9.24	45.75 ± 12.13	2.25	0.735	Not significant
Fasting glucose (mg/dL)	147.50 ± 16.74	137.38 ± 41.73	10.13	0.645	Not significant
Postprandial glucose (mg/dL)	258.00±65.82	228.12 ± 52.73	29.88	0.345	Not significant
HbA1c (%)	7.12 ± 1.60	7.74 ± 1.42	−0.62	0.455	Not significant
Duration of diabetes (months)	30.00 ± 6.93	50.25 ± 35.18	−20.25	0.046	Not significant
Peroneal nerve (motor)–right (m/sec)	71.55 ± 8.72	56.13 ± 6.57	15.42	0.001	Significant
Peroneal nerve (motor)–left (m/sec)	72.59 ± 9.62	59.28 ± 7.74	13.31	0.034	Significant
Sural nerve–right (m/sec)	42.55 ± 0.00	46.37 ± 7.30	−3.82	0.319	Not significant
Sural nerve–left (m/sec)	42.40 ± 1.69	43.87 ± 5.39	−1.47	0.604	Not significant
Variable	Category	≤ 300 pg/mL (n=9) Count (%)	> 300 pg/mL (n=11) Count (%)	Chi-square p-value	
Sex	Female	9 (100.0%)	9 (81.8%)	0.479	Not significant
	Male	0 (0.0%)	2 (18.2%)		
Comorbidity	COPD	3 (33.3%)	0 (0.0%)	0.074	Not significant
	HTN	0 (0.0%)	2 (18.2%)	0.479	Not significant
	HTN + COPD	0 (0.0%)	1 (9.1%)	1.000	Not significant
	Hypothyroidism	0 (0.0%)	2 (18.2%)	0.479	Not significant
	No Comorbidity	3 (33.3%)	5 (45.5%)	0.670	Not significant
Diabetic neuropathy (Clinical)	No	9 (100.0%)	11 (100.0%)	—	
Nerve conduction study/MNSI	No	9 (100.0%)	11 (100.0%)	—	

Results:

The study compared diabetic patients with Vitamin B12 ≤ 300 pg/mL (n = 9) and >300 pg/mL (n = 11) to assess differences in clinical and electrophysiological parameters. Key results showed no significant differences in age or metabolic control (fasting glucose, HbA1c). However, the higher B12 group had a significantly longer duration of diabetes (p = 0.046) and demonstrated significantly slower motor nerve conduction velocities in the Peroneal nerve bilaterally (p = 0.001 for right, p = 0.034 for left). Specifically, the lower B12 group had faster Peroneal nerve conduction (e.g., 71.55 ± 8.72 m/sec right) than the higher B12 group (56.13 ± 6.57 m/sec right), suggesting greater subclinical nerve impairment in the group with higher B12 levels. Despite these electrophysiological differences, 100% of patients in both groups were negative for a clinical diagnosis of Diabetic Neuropathy. No significant differences were found for Sural nerve velocities or the distribution of comorbidities.

Early and Sustained Benefits of Saroglitazar in Patients With Diabetic Dyslipidemia – A Retrospective Study With 36 Months Duration in Indian Patients

Gaurav Chhaya, Sarthak Chhaya, Kunal Jhaveri

Shivam Medi Care Hospital; 2GMERS Hospital; Zydus Healthcare Limited

Objective: Retrospective evaluation of effectiveness and safety of saroglitazar 4 mg in diabetic dyslipidemia patients after long-term therapy of 36 months.

Methods: In this retrospective study of 100 diabetic patients with serum TG >150 mg/dL, 4 mg saroglitazar was prescribed for 36 months along with ongoing statin therapy. Primary endpoints were to analyze effect on lipid and glycemic parameter at follow-up of 3, 12, 24 and 36 months. Secondary endpoints were to evaluate effect on liver enzymes and changes in renal function parameters like serum creatinine and estimated glomerular filtration (eGFR). Descriptive data analytics has been carried out in the present study and were analyzed by appropriate statistical tests. A p-value of <0.05 was considered as statistically significant.

Results: A total of 100 (61 male and 39 female) T2DM patients' data were analyzed in retrospective, observational study with variable co-morbidities and high TG (TG >150 mg/dl). Early and sustained improvement in metabolic parameters, along with liver enzymes (AST and ALT), was observed from baseline (Table 1). Regarding safety analysis, Saroglitazar was found to be safe without having any major/serious adverse events during 36 weeks of study duration. Serum creatinine and eGFR were not adversely affected during this observational study.

Table 1: Change in Metabolic Parameters, Liver enzyme, and Renal parameters: from baseline at 3, 12, 24, and 36 months follow-up

	Baseline	*After 3 months*	*After 12 months*	*After 24 months*	*After 36 months*
Fasting blood sugar (FBS)					
Mean	171.25	125.39*	120.16*	120.36*	121.94*
SD	58.75	32.97	38.03	35.65	30.92
Postprandial blood sugar (PPBS)					
Mean	239.31*	182.53*	176.36*	177.39*	182.98*
SD	89.93	51.63	49.67	49.30	48.25
Glycosylated hemoglobin (HbA1C)					
Mean	8.37*	7.54*	7.26*	7.15*	7.24*
SD	1.71	1.13	0.94	1.03	1.03
Total Cholesterol (TC)					
Mean	198.92	167.96*	156.10*	166.51*	149.32*
SD	72.74	37.42	31.43	103.25	36.78
High-density lipoprotein (HDL)					
Mean	40.64	41.20	40.47	41.83	44.40
SD	12.34	10.64	11.03	13.61	31.39
Low-density lipoprotein (LDL)					
Mean	105.32	89.08*	86.72	88.20*	87.71*
SD	79.95	29.25	26.37	27.75	25.93
Triglyceride (TG)					
Mean	420.79	271.39	199.47	193.69	177.09
SD	145.16	150.61	174.12	116.93	81.77
Alanine aminotransferase (ALT)					
Mean	43.88	33.02*	25.90*	24.61*	24.63*
SD	35.18	22.87	13.19	11.26	10.26
Aspartate aminotransferase (AST)					
Mean	30.16	22.98*	19.21*	19.31*	19.28*
SD	23.26	12.07	6.71	6.87	6.76
Sr. Creatinine					
Mean	1.89	2.34	0.95	0.91	0.95
SD	0.99	0.79	0.22	0.22	0.24
Estimated glomerular filtration rate (eGFR)					
Mean	87.12	89.50	90.16	93.23	90.08
SD	23.26	21.71	20.17	19.94	20.58

**p-value< 0.05 compared with baseline*

Conclusion: High TG is considerably associated with diabetes mellitus, and utmost it is important to reduce TG when it is more than >150 mg/dl. 36 months use of Saroglitazar, a dual PPAR receptor agonist which significantly reduces lipid and glycemic parameters at early stage of therapy and shares consistent benefit for long duration in Indian diabetic patients with better tolerability.

Mobile Screening For Early Identification Of Microvascular Complications: A Step In Bridging The Gaps In Detection.

Yasmee, Akash Pawar, Anamika patel, M Sukumar
Associate Professor General Medicine AIIMS Bhopal; Assistant Professor General Medicine AIIMS Bhopal; Junior resident General Medicine AIIMS Bhopal; Professor and Head, Dept of Interventional and Diagnostic Radiology, AIIMS Guwahati

Introduction: Type 2 diabetes mellitus (T2DM) often remains undiagnosed for several years, leading many individuals to present with complications at the time of diagnosis. To enhance early detection at the community level, mobile screening units can serve as an effective outreach strategy, especially for rural populations who face barriers such as loss of income and travel distance to healthcare centers. This study aimed to assess the feasibility of mobile screening units for early detection of microvascular complications and to describe their distribution among diabetic individuals in central India.
Methods: A cross-sectional study was conducted among adults (≥30 years, non-pregnant) with T2DM residing in districts of central India covered by a mobile health facility. Non-diabetics and pregnant women were excluded. Demographic, anthropometric, and clinical data were collected. Screening for microvascular complications (neuropathy, nephropathy, and retinopathy) was performed using a mobile healthcare unit. Data were analyzed using SPSS version 22, with associations assessed via chi-square tests; p <0.05 was considered significant.
Results: The mean age of participants was 55.56 ± 9.21 years, with females comprising 64.8%. Overweight individuals accounted for 44.97%, and the mean fasting blood sugar was 259 ± 53.43 mg/dl, indicating poor glycemic control. Mobile screening acceptance was high, 82.12%, and 80.79% of referred individuals attended further evaluation. Neuropathy (41.34%) was the most prevalent complication, followed by nephropathy and retinopathy.
Conclusion: Mobile screening units are a feasible and effective approach for early detection of diabetic microvascular complications in underserved areas, improving access to care and promoting better long-term management.

Peripheral Arterial Disease among Patients with Newly Diagnosed Type II Diabetes Mellitus

Eshwar Raipalle, Md Jamil, Bhupen Barman, Pranjal Phukan, Kewi Thinwangbo Newme[5]
PG Trainee, Department of General Medicine, AIIMS Guwahati, Assam, India; Additional Professor, Department of General Medicine, AIIMS Guwahati, Assam, India; Professor and Head, Department of General Medicine, AIIMS Guwahati, Assam, India; Professor and Head, Department of Interventional and Diagnostic Radiology, AIIMS Guwahati, Assam, India; Department of General Medicine, AIIMS Guwahati, Assam, India

Introduction: Diabetes mellitus is a group of metabolic disorders characterized by high blood sugar due to decreased insulin secretion, insulin resistance, or both. Diabetes leads to significant physical, mental, and economic burdens through complications. These include microvascular damage (retina, nerves, kidneys) and macrovascular disease (heart, brain, limbs), contributing to a global health crisis. PAD involves the narrowing or blockage of peripheral arteries, mainly in the lower limbs, often due to atherosclerosis. In diabetics, PAD frequently affects distal arteries and can be a marker for systemic vascular disease. PAD is often underdiagnosed in diabetics due to neuropathy. Symptoms may first appear as ulcers or gangrene. Treatment includes lifestyle changes, medications, and revascularization through surgery or endovascular methods like angioplasty and stenting. Even though there are many studies regarding the prevalence of PAD in diabetes mellitus patients and its correlation with risk factors, there are limited studies regarding the prevalence of PAD in newly diagnosed diabetes mellitus patients. So by diagnosing PAD early in the course of the disease, we can reduce the disability related to the condition by Screening for PAD through ABI.
Methodology: It is a hospital-based cross-sectional observational study. Cases of newly diagnosed Diabetes mellitus attending the medicine OPD/ admitted in IPD in the department of General Medicine, at AIIMS GUWAHATI, based on American Diabetes Association (ADA) criteria, fulfilling the inclusion and exclusion criteria were included in the study. Patients above 18 years of age, with no past history of Diabetes mellitus and not on any anti-diabetic medications or Insulin within 3 months, were included in the study. Patients with leg ulcer other than diabetic foot ulcer, Pregnancy, Buerger's disease, DVT, Lower limb swelling due to other causes, trauma, amputations due to any other cause other than diabetic foot disease, Patients with ESRD, Decompensated chronic liver diseases were excluded from the study. A detailed history and physical examination was done. General physical examination and vitals (blood pressure, pulse rate, O2 saturation) were recorded. Anthropometric measurements were taken using standardized techniques and calibrated equipment. Fasting lipid profile and other routine blood investigations, such as hemogram, Kidney function test, Liver function test, HbA1C, and Fasting and 2-hour postprandial blood sugar levels, were done. Ankle Brachial Index (ABI) is measured by Blood pressure measurements in the Posterior tibial and brachial arteries using a Sphygmomanometer and a stethoscope. ABI of <0.9 is taken as peripheral arterial disease, 0.9 - 1.3 as normal, and >1.3 as calcified vessels. Data was entered into MS Excel and analyzed using SPSS (version 27.0; SPSS Inc., Chicago, IL, USA).
Results: A total of 60 patients were included in the study, with 34 males and 26 females. the mean age was 44.5 with a SD of 10.6. Most of them have hypertension as another comorbidity. The prevalence of PAD among newly diagnosed diabetes mellitus was 13.33%. There was a positive correlation between PAD and LDL and between PAD and BMI. There is no correlation between PAD and HbA1C.
Conclusion: The prevalence of PAD in newly diagnosed diabetics was significantly high, with 13.33%. Since PAD is a debilitating condition leading to disability, by diagnosing PAD early in the course of the disease, we can reduce the disability related to the condition by screening for PAD through ABPI. Lifestyle modification and management of dyslipidemia are important to prevent PAD early in the course of the disease.

Endocrinology

Gamma Glutamyl Transferase (GGT): A Surrogate Marker in Early Detection of Metabolic Syndrome

Visal Vijayen, Basanth Kumar S
KIMS Hospital & Research Centre, Bengaluru, Karnataka, India

Background: Metabolic syndrome (MetS), characterized by central obesity, dyslipidemia, hypertension, and hyperglycemia, is a major predictor of cardiovascular and metabolic diseases. Gamma-glutamyl transferase (GGT), traditionally considered a hepatic enzyme, is increasingly recognized as a marker of oxidative stress and has shown significant association with various components of MetS.
Methodology: A cross-sectional study was conducted on 50 adult outpatients, grouped into MetS and non-MetS categories based on International Diabetes Federation (IDF) criteria. Serum GGT levels were measured along with waist circumference, BMI, blood pressure, fasting glucose, HDL cholesterol, and triglycerides. Statistical analysis included an independent *t*-test, Pearson correlation, and ROC curve analysis to assess the diagnostic utility of GGT.
Results: GGT levels were significantly higher in the MetS group (61.45 ± 14.66 U/L) compared to controls (36.32 ± 18.48 U/L, $p < 0.001$). Triglycerides, systolic BP, and fasting glucose were also significantly elevated, while HDL levels were lower in the MetS group ($p < 0.01$). ROC analysis revealed an AUC of 0.88 for GGT, with a cutoff >51.4 U/L yielding 82% sensitivity and 92% specificity for diagnosing MetS. Correlation analysis showed weak positive trends with metabolic parameters, though not statistically significant.
Conclusion: Serum GGT shows strong potential as a non-invasive and cost-effective biomarker for early detection of metabolic syndrome. Its integration into routine metabolic screening may facilitate early diagnosis and targeted intervention. Further large-scale studies are needed to confirm its predictive value in diverse populations.

Practice Patterns of Oral Corticosteroid Use in India—A Multispecialty E-survey: Reaffirming the Gold Standard

Shailesh Pallewar, NK Soni, Agam Vora, Shailesh Pallewar, Ashwin Kotamkar
Senior Consultant & Head, Internal Medicine, Yatharth Super Speciality Hospital, Greater Noida, Uttar Pradesh; Medical Director, Vora Clinic, Mumbai; Senior Manager, Medical Affairs, Macleods Pharmaceuticals Ltd, Mumbai; AGM, Medical Affairs, Macleods Pharmaceuticals Ltd, Mumbai, Maharashtra, India

Introduction: Oral corticosteroids are widely used in clinical practice, but may cause severe adverse effects.
Materials and methods: A pan-India, multispecialty e-survey was conducted to determine the practice pattern pertaining to oral corticosteroids. The E-Survey consisted of 12 questions, and Google Forms was used. Responses were taken from Dermatologists, ENT, Internal Medicine, Pediatricians and Pulmonologists. Convenience sampling was used to reach a minimum of n =1300. Descriptive statistics were used to analyze data using MS-Excel 2019.
Result: 1356 responses were received, 36% from Pediatricians, 22% from ENT, 16% each from Dermatologists and Internal Medicine, and 10%

from Pulmonologists. While prescribing oral corticosteroid, 19.5% (*n* = 264) would consider safety as the most important attribute, followed by 18.2% (*n* = 247) who consider a combination of safety, efficacy, and potency. Prednisolone was the first choice of 67% (n = 909). For short and long-term use, prednisolone was preferred by 64.4% (*n* = 873) and 58.5% (*n* = 793), respectively. The reason for preferring prednisolone was efficacy in 37.4% (*n* = 514), safety in 21.2% (*n* = 288), and past experience in 21.8% (*n* = 295). 63.6% (*n* = 826) find no bothersome side effects with prednisolone, hence no switch to another corticosteroid is needed. 56.3% (*n* = 763) prefer morning dosing of prednisolone, whereas 20.9% (*n* = 283) prefer dosing at any time of the day. In short-term therapy, 65% (*n* = 885) consider tapering of dose, and 93.8% (*n* = 1,272) consider Prednisolone as 'Gold Standard' corticosteroid, as it is a time-tested molecule.

Conclusion: Our e-survey highlights that prednisolone is the most preferred oral corticosteroid among Indian clinicians across specialties, largely due to its efficacy, safety, and experience. Even after 70 years of its approval by the USFDA, 93.8% of Indian clinicians consider prednisolone the gold standard corticosteroid. Both short- and long-term therapy, with morning dosing and tapering being common practices. Overall, these findings in routine clinical practice reflect Indian clinicians' confidence in prednisolone due to its balance of effectiveness and tolerability.

Thyroiditis

Chandan Sarmah

Maa Gayatri Medical

Thyroiditis can be caused by viral infections, autoimmune mechanisms, medications, radiation, and fibrosclerotic processes. Depending on the etiology and time since onset thyroiditis can present with thyrotoxicosis, hypothyroidism or euthyroidism. Neck pain is classically associated with acute infections, subacute and radiation-induced thyroiditis while it is absent in most of the other forms of thyroiditis. Subacute thyroiditis occurs following viral infection and presents with neck pain and fever, and has a thyrotoxic phase lasting for a few weeks to 3 months followed by a period of transient hypothyroidism lasting 6 months followed by restoration of euthyroidism. Close monitoring is important while avoiding inadvertent levothyroxine supplementation in the transient hypothyroid phase. It is important to differentiate the thyrotoxic phase of SAT from Graves' disease by low uptake of 99mTc scan, ultrasonography findings of heterogeneous, poor patchy uptake; absence of persistent elevation of TSH receptor antibodies, and presence of inflammatory markers such as high ESR. A number of novel Doppler vascularity markers and blood tests such as eosinophil: monocyte ratio, PLR and the T3:T4 ratio may be helpful in differentiating these two. Women who are TPO antibody positive have a high chance of developing painless PPT, and thyroid function should be closely monitored at 6 - 12 weeks and at 6 months postpartum. Thyroid function should be closely monitored in those receiving immune checkpoint inhibitors, tyrosine kinase inhibitors, lithium and amiodarone.

Primary Hyperparathyroidism in Renal Stone Disease Patients: A Cross-sectional Study from Manipur

Amazinglin Kharjana

Background: Primary hyperparathyroidism (PHPT) is a common endocrine disorder and a known cause of nephrolithiasis. While its incidence has declined in the West due to early detection, Indian studies continue to report high rates of renal stones linked with PHPT. Data from Manipur, a state with a high burden of urolithiasis, are scarce.

Objectives: 1. To determine the prevalence of PHPT in patients with renal stone disease. 2. To identify predictors of PHPT among stone formers.

Methods: This cross-sectional study was conducted at RIMS, Imphal, between May 2022 and June 2024. Seventy-six patients aged ≥18 years with renal stone disease and normal renal function were enrolled. Clinical history, biochemical tests (serum calcium, phosphate, albumin, creatinine, alkaline phosphatase, vitamin D, intact PTH), and imaging were performed. PHPT was diagnosed based on elevated iPTH with/without hypercalcemia after excluding secondary causes.

Results: Of 76 patients (mean age 46 years, 54% female), 5 (6.6%) were diagnosed with PHPT, a prevalence much higher than the general population. Recurrent stones were strongly associated with PHPT (80% vs 21%; p=0.013). Patients with PHPT had significantly higher serum calcium (11.9 ± 1.3 vs 9.2 ± 0.4 mg/dL; $p < 0.001$) and alkaline phosphatase (171 ± 50.8 vs 95 ± 27.8 IU/L; $p < 0.001$). One patient had normocalcemic PHPT. Other parameters were not significantly different.

Conclusions: This first report from Manipur shows a high prevalence of PHPT among renal stone patients, particularly in recurrent stone formers. Serum calcium and alkaline phosphatase emerged as strong predictors. Biochemical screening in recurrent stone formers may enable early diagnosis and curative treatment, reducing renal morbidity.

Keywords: Primary hyperparathyroidism, renal stones, nephrolithiasis, parathyroid hormone, hypercalcemia

Metabolic Crosstalk in Thyroid Dysfunction: Evaluating Leptin, Insulin Resistance, and Dyslipidemia

Soumya Gupta, Sanjay Kumar, LH Ghotekar, Anupam Prakash, Ramesh Aggarwal

Department of Medicine, Lady Hardinge Medical College and Associated SSK Hospital, New Delhi, India

Introduction: Hypothyroidism, including overt and subclinical forms, is associated with metabolic disturbances such as dyslipidemia, insulin resistance, and altered adipocyte function. Leptin, a key adipokine, may mediate these metabolic consequences, but its role remains unclear. This study examined the interrelationship between serum leptin, HOMA-IR, and lipid profiles in hypothyroid versus euthyroid adults, with subgroup analysis of overt and subclinical hypothyroidism.

Materials and methods: A cross-sectional observational study (April 2024-August 2025) included 80 adults, 40 newly diagnosed hypothyroid patients (82.5% subclinical, 17.5% overt) and 40 euthyroid controls, matched for age, sex, and BMI. Serum leptin, HOMA-IR, thyroid function, and lipid profiles were measured using standard methods. Statistical analyses assessed intergroup differences and correlations.

Results: Hypothyroid patients had higher serum leptin (29.3 ± 20.4 vs. 16.3 ± 15.8 ng/mL; p=0.001) and HOMA-IR, indicating greater insulin resistance. LDL-C levels were elevated (105.4 ± 29.6 vs. 88.7 ± 23.8 mg/dL; p<0.01), while other lipid parameters were similar. Within the hypothyroid cohort, overt patients showed greater increases in leptin, HOMA-IR, and LDL-C than subclinical patients, suggesting a graded relationship with thyroid dysfunction severity. Positive correlations were observed between TSH and serum leptin and between TSH and HOMA-IR.

Conclusion: Hypothyroid adults are associated with elevated leptin, insulin resistance, and atherogenic dyslipidemia, as compared to euthyroid controls. This association is more pronounced in overt disease. These findings support prioritizing lipid screening and cardiovascular risk assessment in overt hypothyroidism, with consideration in subclinical cases, particularly when TSH >10 µIU/mL or other risk factors are present. This emphasizes the importance of early detection and management to reduce long-term cardiovascular and metabolic complications.

The Interplay between Vitamin C, Serum Iron, and Serum Sorbitol In the Development of Insulin Resistance: A Pilot Pre-post Study

Souvik Sen, Kamalika Sen, Debashree Das, Angik Mukherjee, Jawed Ali Warsi

Department of General Medicine, KPC Medical College and Hospital, Kolkata, West Bengal, India; Department of Chemistry, University of Calcutta, Kolkata, West Bengal, India; Department of General Medicine, KPC Medical College, Kolkata, West Bengal, India

Ascorbic acid is well known for its antioxidative properties as well as its effects on increased iron absorption and inhibition of the polyol pathway and sorbitol synthesis. Its summative role on insulin resistance is not clear; whether the decreased sorbitol is beneficial in reducing Insulin Resistance or the increased iron causes worsening of Insulin Resistance needs to be established. We aim to find the effect of Insulin Resistance after feeding healthy subjects of Birbhum with 500 mg of ascorbate for 1 month. Our pre-post nonrandomized study revealed a significant increase in Insulin Resistance with regular use of vitamin C for a month.

Keywords: Ascorbate, Insulin resistance, Sorbitol.

Gastroenterology

Digestive Enzymes, Probiotic and Prebiotic (Digifine) in the Treatment of Functional Gastrointestinal Disorders: Results of an Indian, Real-world, Prospective, Multicenter Study

Shailesh Pallewar, Rajiv Tungare, Vinit Yadav, Ashok Habbu

Macleods Pharmaceuticals Ltd; Heart & Diabetes Care Centre, 104, Gulmohar Complex, Near Goregaon Station, Goregaon East, Mumbai, Maharashtra; Gokuldham Medical Center, 19, Krishna Vatika Marg, Gokuldham Colony, Goregaon (E), Mumbai, Maharashtra; Shiv Clinic, Pratap Nagar, Gumph Road, Jogeshwari East, Mumbai, Maharashtra, India

Background: Functional gastrointestinal disorders (FGIDs) also known as disorders of gut–brain interactions, are amongst the most frequently encountered GI conditions with more than 40% global prevalence. There is a well-recognized link between alterations in gut microbiota and development of FGIDs. Dietary interventions, including probiotics and digestive enzymes, favorably influence the composition and activity of gut microbiota, thereby making it a promising approach.

Materials and methods: This Indian, real-world, prospective, multicenter study was conducted to evaluate the effectiveness and tolerability of Digifine (multidigestive enzymes, probiotics, and prebiotic FOS) in FGID patients.

FGID patients received 1 Digifine capsule after meals (2 capsules/day), as per the treating physician's clinical practice, with the primary outcome being the change in total symptom burden score and global impact score, measured by the Structured Assessment of GI Symptoms (SAGIS) scale at Day 0 and Day 7. Secondary outcomes were the change in Global Overall Symptom (GOS) score from day 0 to 7 and safety assessment.

Results: Overall, 60 patients completed this study. A significant reduction in patients' total symptom burden score (MD: 49.5; 95% CI: 46.0 to 52.9; p <0.001) and global impact score (MD: 17.8; 95% CI: 16.6 to 19.0; p <0.001) was observed from day 0 to 7. Furthermore, higher reduction was observed in several sub-scores such as epigastric pain score, nausea and vomiting score, diarrhea and discomfort score. For the secondary endpoint, the mean (SD) GOS score decreased significantly from a baseline of 5.7 (0.9) to 1.7 (0.8) on day 7, with a mean difference of 4.1 (95% CI: 3.7 to 4.4; $p < 0.001$). For Physicians' global safety evaluation, most of the physicians (80%) reported a good safety profile and 20% reported safety profile as excellent.

Conclusion: This study shows that a combination of digestive enzymes, probiotics, and prebiotics (Digifine) is effective with notable benefits across multiple GI symptom domains. The favorable safety profile further supports Digifine as a promising therapeutic option for managing FGIDs.

Clinical Profile of Patients with New-onset Alcoholic Liver Disease and Predictability of Outcomes With Various Prognostic Scores

Anmol Sharma, Padmaprakash KV, Jitender Sharma
INHS Sanjivani; CHEC, Kolkata, West Bengal; MH Jaipur, Rajasthan, India

Introduction: Alcohol-associated liver disease (ALD) encompasses conditions ranging from fatty liver to cirrhosis and fibrosis, driven by chronic alcohol use. Prevalence is influenced by alcohol intake, genetics, gender, and BMI. Clinical presentation varies, often with decompensation and alcoholic hepatitis. Prognostic scores such as CPT, MELD, MDF, GAHS, and ABIC are used to assess mortality risk. Management includes abstinence, nutritional support, and steroids.

Methodology: A prospective cohort study was conducted at a tertiary hospital in India on 165 ALD patients identified through consecutive sampling. Evaluation included history, clinical examination, and diagnostics. Data were collected using a validated questionnaire, and severity/mortality scores were calculated. Mortality was recorded at 28 and 90 days. Analysis was performed with MedCalc and SPSS. Ethical clearance and informed consent were obtained.

Results: Of 165 patients (mean age 38.38 years, 161 males), average alcohol intake exceeded 10 units/day, mainly rum. Diagnoses included 79 fatty liver, 24 alcoholic hepatitis, and 62 cirrhosis. Common symptoms were anorexia and jaundice. Overall mortality was 10.3%. Among cirrhotics, MELD and CPT scores showed high sensitivity for predicting mortality, with CPT having superior specificity and negative predictive value. For alcoholic hepatitis, ABIC, MELD, and MDF scores showed 100% specificity, with MDF demonstrating the highest sensitivity.

Conclusion: The study revealed a young, predominantly male ALD population, with alcohol initiation around 26 years. Rum was the commonest liquor, and the duration of intake varied by stage. Mortality was 10.3%, driven mainly by cirrhosis. MELD and CPT were most useful for cirrhosis mortality prediction, while ABIC, MELD, and MDF were highly specific for alcoholic hepatitis mortality.

Survey on Current Practice Patterns in the Management of Gastroesophageal Reflux Disease (GERD) Amongst Consulting Physicians across India

Rahul Anand, Abhishek Ghosh, Gurmeet Thakur, Vaishali Gupte
Consultant, Department of Critical Care and Emergency Medicine, Care Genix Clinic and Diagnostics, New Town, Rajarhat, Kolkata, West Bengal, India; Consultant, Department of General Medicine, Doctors Clinic, Kolkata, West Bengal, India; Senior Manager, Department of Medical Affairs, Cipla Ltd, Mumbai, Maharashtra, India; Head, Department of Medical Affairs, Cipla Ltd, Mumbai, Maharashtra, India

Introduction: Gastroesophageal reflux disease (GERD) is a prevalent chronic condition in patients with metabolic and respiratory comorbidities. Limited real-world data in India highlight the need to evaluate diagnostic and treatment practices amid evolving therapeutic options.

Objectives: To assess physician's perspectives on the prevalence, diagnosis, and pharmacological management of GERD in clinical practice.

Methods: A digital survey with 12 structured questions was conducted among Indian physicians from February to July 2025. Data on demographics, symptom patterns, diagnostics, therapeutic preferences, PPI limitations, referrals, and screening tool use were collected through convenience sampling and analysed descriptively.

Results: Among 245 physicians, 42.04% had 11–20 years of experience. Around 45.71% reported that 20–40% of patients with comorbidities have GERD, most commonly obesity (45.31%) and diabetes (31.43%). Heartburn (73.88%) and regurgitation (52.24%) were frequent symptoms. GERD was primarily diagnosed based on clinical symptoms (82.04%). Only 25.71% physicians used screening questionnaires to facilitate early GERD diagnosis. First-line therapy included PPI + prokinetics (31.84%), PCABs (Vonoprazan), or PPI alone (each 29.39%). Majority of the physicians followed American College of Gastroenterology guidelines (55.51%) and Indian Society of Gastroenterology consensus (38.78%). Combination of PPI + prokinetics was used for PPI non-responders (54.29%) or gastroparesis (38.78%). PPIs were rated highly effective and well tolerated by 73.46%,70.21% respectively. Limitations included timing before meals (67.35%), slow onset (45.71%), and nocturnal symptoms (34%). Patients were referred to gastroenterologists primarily for refractory GERD (71.84%) or alarm symptoms (52.65%).

Conclusion: The study demonstrates that Indian physicians primarily rely on clinical assessment for GERD based on symptoms. PPI +prokinetics was the most preferred first-line therapy followed by PCABs (Vonoprazan), or PPI alone. Physicians also reported that PPIs are effective and well tolerated in treatment of GERD.

Keywords: Potassium-competitive acid blocker, PPI, vonoprazan, GERD.

Evaluation of Prevalence of Comorbidities in Patients with or without Increased Uric Acid Levels and Correlation between Increased Uric Acid Levels And Comorbidities: A Multicenter, Retrospective, Cross-sectional Study in a Real-world Setting (Epic Study)

Anil Vardani, Aghosh Pasricha, Sachin Ambirwar, Roshni Panchal, Chintan Khandhedia[5]
BLK-Max Super Specialty Hospital, New Delhi, India; Pasricha Medical, Heart, Chest, and Diabetes Clinic, Delhi; Medical Affairs and Clinical Research, Sun Pharma Laboratories Ltd.

Background: Hyperuricemia may lead to metabolic and cardiovascular diseases due to endothelial cell dysfunction and oxidative stress. There is limited data regarding association of hyperuricemia with these comorbidities in the Indian population.

Methods: This retrospective, cross-sectional, observational, multicenter study assessed existing medical records of patients of either gender aged 18 years and above from September 2023 to October 2024 who had an assessment of their serum uric acid levels within last 1 year. The study was approved by the Independent Ethics Committee.

Results: The study included aggregated and anonymized data of 536 patients from 50 centers; 284 were hyperuricemic, and 420 patients had a history of gout. Patients were predominantly male (59.3%), with the majority aged between 51 and 75 years. Among 284 hyperuricemic patients, the prevalence of cardiovascular disorders was 52.5% (n =149), hypertension 50% (n =142), metabolic disease 47.9% (n=136), diabetes mellitus 32.4% (n=92), and dyslipidemia 25.4% (n=72). Serum uric acid levels were significantly higher in patients with chronic kidney disease (7.34 ± 1.66 mg/dL, p=0.041). There was a statistically significant, very weak positive correlation of dyslipidemia (r =0.086, p =0.048) and hypertension (r =0.099, p =0.021) with serum uric acid level. Additionally, there was a very weak correlation (statistically nonsignificant) of metabolic disease, diabetes mellitus, chronic kidney disease, stroke, and coronary artery disease with serum uric acid level. Febuxostat was prescribed to 96.7% patients as the main uric acid-lowering therapy.

Conclusion: Predominance of comorbidities in hyperuricemia is clinically relevant for risk stratification and management. Clinicians can intervene early for the detection of hyperuricemia in patients with metabolic and cardiovascular diseases.

Antibacterial Activity of Faropenem against Clinical Isolates from Infections in Indian Adults

Kavitha A K, Ravikumar K L, Sachin Ambirwar, Neeraj Markandeywar, Chintan Khandhedia
Central Research Laboratory, Kempegowda Institute of Medical Sciences, Bengaluru, Karnataka, India; Medical Affairs and Clinical Research, Sun Pharma Laboratories Limited, Mumbai, Maharashtra, India

Background: Faropenem, an oral penem, has broad antimicrobial activity against aerobic gram-positive, gram-negative, and anaerobic bacteria. This *In Vitro* study is planned to assess the antimicrobial susceptibility of faropenem in comparison with other CLSI-recommended antibiotics against 660 isolates from urinary tract infections (UTI), respiratory tract infections (RTI), and skin and soft tissue infections (SSTI).

Methods: Susceptibility of bacterial isolates (*Klebsiella pneumoniae, Escherichia coli, Staphylococcus aureus, Streptococcus pneumoniae,* and *Streptococcus agalactiae*) from different sites of adult infections was evaluated for faropenem in comparison to CLSI-recommended antibiotics using the E-test and VITEK2 method, respectively. This interim analysis presents susceptibility data of all planned isolates except *H. influenzae*.

Results: A total of 608 isolates were assessed [UTI–*Klebsiella pneumoniae* (n=112), *Escherichia coli* (n=110), *Streptococcus agalactiae* (n=110); RTI–*Streptococcus pneumoniae* (n =110), *K. pneumoniae* (n =60); SSTI–*Staphylococcus aureus* (n =106)].

In UTI, faropenem sensitivity rates among ESBL (94%) and carbapenemase (71%) producers *E. coli* isolates were 29% and 15% respectively. Faropenem sensitivity rates among ESBL(78%) and

carbapenemase(58%) producers *K. pneumoniae* isolates were 31% and 28% respectively. All 100% *S. agalactiae* isolates were faropenem-susceptible, whereas 57% and 56% were susceptible to clindamycin and erythromycin, respectively.
In RTI, *S. pneumoniae* showed 100% susceptibility to faropenem, and resistance was highest to erythromycin (81%) and trimethoprim/sulfamethoxazole (79%). Faropenem sensitivity rates among ESBL (88%) and carbapenemase (73%) producers of *K. pneumoniae* were 19% and 11% respectively.
In SSTI, *S. aureus* was 99% susceptible to faropenem; higher resistance was observed to erythromycin (65%) and clindamycin (42%). Faropenem sensitivity was 100% for vancomycin-intermediate-*S. aureus* (VISA)/ vancomycin-resistant-*S. aureus* (VRSA) and linezolid-resistant *S. aureus*, which were 8% of MRSA (n = 75).
Conclusion: Faropenem sensitivity against ESBL/Carbapenemase producers and MRSA highlights its importance in the management of bacterial infections in view of rising antimicrobial resistance. Faropenem has strong activity against *S. aureus, S. pneumoniae,* and *S. agalactiae*. Thus, faropenem can be a valuable addition to the existing treatment armamentarium for UTI, RTI, and SSTI.

Clinicoetiological Profile and Outcomes of Patients Presenting with Space-occupying Lesions of Liver: A Prospective Study from a Tertiary Care Center in South India

Sruthi puli, Sowmya Ummani, M. Nageswara Rao, Naval Chandra Sumaswi Angadi
Junior Resident, Department of General Medicine, Nizam's Institute of Medical Sciences, Hyderabad, Telangana, India; Nizam's Institute of Medical Sciences, Hyderabad, Telangana, India

Background: Space-occupying lesions (SOLs) of the liver represent a heterogeneous group of disorders, ranging from benign cysts and abscesses to primary and secondary malignancies. The availability of high-resolution imaging has increased incidental detection, yet the clinico-etiological patterns and outcomes vary across populations. This study aimed to describe the spectrum, clinical presentation, and short-term outcomes of hepatic SOLs in patients attending a tertiary care hospital in South India.
Objectives:
- To evaluate the clinical and etiological profile of patients presenting with hepatic SOLs.
- To assess biochemical, microbiological, and imaging characteristics.
- To study treatment modalities and in-hospital outcomes.

Materials and methods: A prospective observational study was conducted in the Department of General Medicine, Nizam's Institute of Medical Sciences, Hyderabad, between January 2023 and June 2024. Patients with radiologically confirmed hepatic SOLs were included. Detailed clinical evaluation, hematological and biochemical investigations, serological tests (for amoebic and hydatid disease), and imaging studies (USG, CT, MRI) were performed. Etiology-specific management—antimicrobials, percutaneous drainage, or oncologic therapy—was instituted. Outcomes were analyzed at discharge.
Results: Among the study cohort, liver abscesses constituted the majority of lesions, followed by metastatic deposits and hepatocellular carcinoma (HCC). Pyogenic abscesses predominated, with Klebsiella pneumoniae as the commonest pathogen. Diabetes mellitus was the leading comorbidity. Most abscesses responded favorably to antibiotics and image-guided drainage. Malignant lesions, especially HCC in cirrhotic patients, were associated with poor outcomes and higher mortality. Hydatid and amoebic cysts showed excellent recovery with medical or minimally invasive therapy.
Discussion: Liver abscesses remain the predominant etiology of hepatic SOLs in India, reflecting a persisting infectious burden, whereas malignant lesions are emerging as a result of increased longevity and improved diagnostic access. The dominance of Klebsiella in pyogenic abscesses parallels recent regional data. Prompt radiological diagnosis, appropriate antibiotic coverage, and drainage markedly improve survival. Early detection of malignancy and access to advanced therapies such as transarterial chemoembolization and systemic agents remain limited challenges.
Conclusions: Hepatic SOLs in Indian patients show a predominance of infectious causes, chiefly pyogenic abscesses, followed by metastatic and primary hepatic malignancies. Early imaging and targeted intervention yield favorable outcomes in benign lesions, while prognosis in malignant SOLs depends on stage and underlying liver disease. Strengthening diagnostic and interventional facilities is essential for better clinical outcomes.

Geriatrics

Anemia in Elderly

Nikhileshwar Prasad Verma
Sahyog Hospital, Patna, India

Introduction: Anemia in the elderly should not be dismissed as a natural consequence of aging. Even mild anemia can have a significant adverse impact on the physical and cognitive functioning of older adults. One of the most common types in this age group is anemia of chronic inflammation. Other frequent causes include nutritional deficiencies, chronic kidney disease, bone marrow failure syndromes, and clonal cytopenias of undetermined significance. In some cases, no identifiable cause is found, and the condition is termed unexplained anemia of the elderly.
In many patients, anemia may result from multiple contributing factors. Therefore, a comprehensive, multidisciplinary approach is essential for accurate diagnosis and effective management.
Treatment strategies should be tailored based on the underlying cause, the severity of anemia, the presence of comorbidities, and the rate at which the anemia has developed.
The population of older adults is rapidly increasing as life expectancy continues to rise. By 2050, India is projected to have 324 million people over the age of sixty. Globally, one in four individuals is affected by anemia, and in India, the prevalence among the elderly ranges widely—from 21% to 97%.
According to World Health Organization (WHO) criteria, anemia is defined as hemoglobin levels below 12 g/dL in women and below 13 g/dL in men. However, different medical societies, such as those in cardiology and nephrology, may adopt varying thresholds. In most cases, anemia is not just a standalone condition but serves as a surrogate marker, often indicating the presence of underlying overt or subclinical disease.
Hence, anemia in the elderly should be taken seriously and thoroughly evaluated. It is often associated with a poor quality of life, and its symptoms can be subtle or nonspecific. Common consequences include cognitive impairment, increased risk of falls and fractures, cardiovascular complications, and higher rates of hospitalization. Anemia is also recognized as an independent risk factor for mortality in older adults.
Conclusion: Anemia in the elderly poses a significant clinical challenge. Early detection through simple blood tests, such as a complete blood count (CBC), is crucial. Effective management depends on identifying and addressing the underlying cause. To better understand the current burden and patterns of anemia in India's aging population, more extensive, nationwide studies are urgently needed.

Quest for Biological Immortality (Lifespan Extension) in Humans

M Abishek
Vinayaka Mission Medical College, Karaikal, Puducherry, India,

Background: My Current knowledge in this field of work is just like the tip of an iceberg; there are so many things to be unveiled in this field.
Aim and objectives: To achieve a state in which the rate of mortality from senescence is stable or decreasing, thus decoupling it from chronological age. A biologically immortal living being can still die from means other than senescence, such as through injury, poison, disease, lack of available resources, or changes to the environment, etc.
Method: Compilation of several meta-analyses from Various parts of the world.
Results:
- By the usage of certain molecules, lifestyle adaptations, reversing the bio-horology of Human DNA methylation clock, it is very much possible to reverse the effects of senescence and decouple it from chronological age and stretch Human life span even further.
- Death will become optional in the upcoming future.

Conclusions: The future scope in the quest for biological immortality is promising.

Comparison of Prognostic Accuracy of Clinical Frailty Scale to Traditional Sepsis Scoring Systems in Elderly Patients with Sepsis Admitted to a Tertiary Care Facility

Sneha HS
M S Ramaiah Medical College and Hospital

Background: Sepsis remains a leading cause of morbidity and mortality among the elderly, whose outcomes are further complicated by physiological decline and co-morbidities. While traditional scoring systems such as the Sequential Organ Failure Assessment (SOFA) and National Early Warning Score (NEWS) assess acute physiological parameters, they may not capture baseline functional status. The Clinical Frailty Scale (CFS), which evaluates pre-admission frailty, has emerged as a promising tool for risk stratification in older adults. This study aims to compare the prognostic accuracy of CFS with SOFA and NEWS in predicting in-hospital mortality among elderly patients with sepsis.
Methods: A hospital-based, prospective observational study was conducted between May 2023 and April 2025, enrolling 142 patients aged ≥60 years diagnosed with sepsis as per the Surviving Sepsis Campaign (2021) criteria. Each patient was assessed within 24 hours of admission using the CFS, SOFA, and NEWS scores. Outcome measures included in-hospital mortality. Statistical analysis included ROC curves, odds ratios, and predictive values to determine the performance of each scoring system.
Results: Patients with CFS >6 had a significantly higher mortality rate (18%) compared to those with CFS 1–6 (11%), with an Odds Ratio (OR) of 2.58. Similarly, SOFA >2 and NEWS >4 were associated

with mortality rates of 25% and 23%, respectively. While NEWS showed the highest sensitivity (80.8%), the CFS demonstrated superior specificity (66.4%) and the highest Negative Predictive Value (NPV) at 0.89, indicating strong performance in ruling out mortality risk. ROC analysis showed comparable AUCs: 0.624 for CFS, 0.618 for SOFA, and 0.627 for NEWS.

Conclusion: The Clinical Frailty Scale offers comparable prognostic accuracy to SOFA and NEWS, with the added advantage of capturing baseline vulnerability in elderly patients. Integration of frailty assessment into routine clinical evaluation can enhance risk stratification, guide personalized care strategies, and improve outcomes in older adults with sepsis. These findings support the routine use of CFS in acute care settings managing geriatric sepsis patients.

Neutrophil CD64 as a diagnostic biomarker in adult sepsis and in correlation with sepsis index and monocyte human leucocyte antigen - DR

Palle Nishita Reddy

Apollo Institute of Medical Science and Research

Introduction: Sepsis remains a major challenge in critical care, driven by a dysregulated host response to infection and associated with high morbidity and mortality. Conventional diagnostic tools—including CRP, procalcitonin, and blood cultures—often lack specificity or are limited by delayed results. Emerging cellular biomarkers offer improved diagnostic accuracy, with neutrophil CD64 gaining prominence due to its rapid upregulation during bacterial infections. Its complementary relationship with monocyte HLA-DR, which decreases during sepsis-induced immunosuppression, has led to the development of the "sepsis index," a composite marker that enhances early detection. Flow-cytometry–based measurement of these markers provides rapid, objective, and clinically actionable data, making them promising tools for timely sepsis diagnosis and risk stratification in critically ill patients.

Aim and objective: To study the neutrophil CD 64 expression as a biomarker in the diagnosis of proven and probable sepsis and in control and correlation with mHLA-DR and sepsis index.

Why do we need a better biomarker?

- Meta-analyses show that each hour of delay in giving appropriate antibiotics after sepsis recognition is associated with an increase in in-hospital mortality, and delays beyond the first hour are linked to a measurable rise in death risk.
- Existing biomarkers help but leave a large "diagnostic gray zone with blood culture taking 48 - 72 hours
- Ideal sepsis biomarker - Detect infection early (hours), with high sensitivity and specificity, Differentiate bacterial sepsis from viral and noninfectious inflammation, predict severity/prognosis, and guide escalation/de-escalation.
- nCD64, also known as Fcγ receptor I, is a high-affinity receptor for immunoglobulin G that plays an important role in immune cell function. Under normal physiological conditions, this receptor is constitutively expressed on monocytes and macrophages but is present at very low levels on circulating neutrophils.

Mechanism: Why is nCD64 elevated?

- *Cytokine-driven upregulation*: Proinflammatory cytokines released in infection (particularly IFN-γ, G-CSF, GM-CSF, TNF-α, and IL-6) induce rapid transcriptional and post-transcriptional upregulation of CD64 on neutrophils. This begins within 4–6 hours of stimulation and is maintained as long as the inflammatory drive persists.
- *Cellular trafficking and maturation*: During infection, bone marrow releases more activated neutrophils and band forms; these cells express higher CD64. Mature neutrophils also increase surface CD64 when exposed to opsonized pathogens or immune complexes.
- *Functional role of CD64*: CD64 (FcγRI) binds IgG with high affinity and triggers phagocytosis, antibody-dependent cellular phagocytosis (ADCP)

Methodology:

- Population: Adults ≥18 years with suspected sepsis and SIRS ≥2/4 before antibiotics.
- Exclusions: All patients meeting predefined exclusion criteria were removed.
- Sample collection:
  - Blood drawn within 4 hours of admission.
  - 2 mL venous blood collected in EDTA tube.
  - Samples sent immediately for analysis along with routine cultures.
- Biomarker analysis:
  - Neutrophil CD64 (nCD64) and monocyte HLA-DR measured using flow cytometry.
  - Sepsis Index calculated: (nCD64 / mHLA-DR) × 100.
- Patient classification:

Sepsis:

Proven sepsis–positive culture

Probable sepsis–clinician decision when cultures negative

Nonsepsis: Inflammatory conditions without sepsis

Controls: Healthy individuals with no infection/inflammation

Results:

- A total of 35 participants were studied: Sepsis (n =20), SIRS (n =8), and Controls (n =7).
- nCD64 MFI was significantly elevated in sepsis (3121.79 ± 1506.88) compared to SIRS and controls ($p < 0.001$), while mHLA-DR MFI showed a progressive decrease from controls to sepsis ($p < 0.001$).
- The Sepsis Index demonstrated the most pronounced separation across groups ($p < 0.001$).
- Among routine parameters, TLC, neutrophil%, platelets, CRP, and bilirubin differed significantly between groups, whereas creatinine showed no significant difference.
- ROC analysis revealed excellent discriminatory ability:
  - nCD64 AUC =0.937,
  - mHLA-DR AUC =0.912,
  - Sepsis Index AUC =0.995, the highest.
- Optimal thresholds showed high diagnostic accuracy:
  - nCD64 ≥2097 → Sensitivity 89.5%, Specificity 93.3%
  - mHLA-DR ≤5317 → Sensitivity 84.2%, Specificity 86.7%
  - Sepsis Index ≥21 → Sensitivity 94.7%, Specificity 100%
- Correlation analysis demonstrated:
  - Negative correlation between nCD64 and mHLA-DR (r =–0.443).
  - Positive correlation between nCD64 and Sepsis Index (r =0.505).
- Subgroup analysis confirmed consistent high performance of nCD64, with AUC values ranging from 0.883 to 1.0 across age, gender, and comorbidity categories.

Conclusion: nCD64, mHLA-DR, and the Sepsis Index are robust immunological biomarkers that reliably distinguish sepsis from non-infectious SIRS and healthy controls. Among them, the Sepsis Index demonstrated near-perfect accuracy (AUC 0.995), achieving 100% specificity at the optimal cut-off. nCD64 also showed excellent diagnostic performance and remained consistently reliable across demographic and clinical subgroups. These findings support the integration of immune-based biomarkers, particularly the Sepsis Index and nCD64, into early sepsis evaluation to improve diagnostic precision and clinical decision-making.

Correlation of Vitamin B12 Levels with Functional Status and Frailty in Geriatric Patients

Sakthivel, Manu Sharma, Altaf Ahmad Mir, Madhukar Mittal

Junior Resident, Department of General Medicine, All India Institute of Medical Sciences, Raebareli, Uttar Pradesh, India; Assistant Professor, Department of General Medicine, All India Institute of Medical Sciences, Raebareli, Uttar Pradesh, India; Additional Professor, Department of Biochemistry, All India Institute of Medical Sciences, Raebareli, Uttar Pradesh, India; Professor and HOD, Department of General Medicine, All India Institute of Medical Sciences, Raebareli, Uttar Pradesh, India

Background: Frailty is a multifactorial geriatric syndrome associated with increased vulnerability to adverse outcomes. While malnutrition is a known contributor, the influence of micronutrients—particularly vitamin B12—remains unclear. Given the high prevalence of vitamin B12 deficiency in the elderly and its link to neurological and functional decline, this study aimed to examine the relationship between vitamin B12, frailty, and functional status in geriatric patients.

Material and methods: A cross-sectional study was conducted at AIIMS Raebareli among patients aged >60 years. Functional status was assessed using the Katz ADL Index and Lawton IADL scale, and frailty was evaluated using Fried's Frailty Phenotype. Serum vitamin B12 was measured using ECLIA and classified as deficient (<200 pg/mL), insufficient (200–300 pg/mL), or normal (>300 pg/mL). Analyses included descriptive statistics, Spearman's correlation, Mann–Whitney U, Kruskal–Wallis with post-hoc tests, and chi-square tests, with $p < 0.05$ considered significant.

Results: Among 130 participants (mean age 66.8 years; 66.2% male), 11.5% were dependent in ADL and 53.8% in IADL. Vitamin B12 deficiency and insufficiency were observed in 23.8% and 25.4% respectively. B12 levels were not significantly associated with ADL ($p = 0.370$) or IADL ($p = 0.491$). However, B12 showed a significant inverse correlation with frailty ($p = 0.001$). Significant differences in Vitamin B12 levels were observed across the frailty groups ($p < 0.001$), with frail individuals showing markedly lower B12 than non-frail ($p < 0.001$). B12 deficiency was significantly associated with frailty status ($p = 0.036$). Katz ADL and Lawton IADL were positively correlated ($p < 0.001$), while frailty correlated negatively with both ADL ($p = 0.005$) and IADL ($p < 0.001$).

Conclusion: Lower vitamin B12 levels were significantly associated with frailty, highlighting the potential role of B12 as a clinically relevant biomarker for identifying vulnerable older adults. These findings underscore the need for comprehensive micronutrient evaluation in geriatric care, as timely detection and correction of B12 deficiency may help mitigate frailty progression. In contrast, no association was observed between B12 levels and functional dependence.

Music Therapy as an Intervention to Reduce Anxiety Levels, Blood Pressure and Blood Sugar in the Elderly Population Staying in an Old Age Home

Mohd Arif Ansari, Jitendra Mahour, Ruchi Soni
Gandhi Medical College, Bhopal, Madhya Pradesh, India ; Gandhi Medical College, Bhopal, Madhya Pradesh, India

Background: Anxiety, hypertension, and dysglycemia are common among the elderly and contribute substantially to morbidity. Music therapy is a safe, non-pharmacological intervention that has shown promising effects on autonomic regulation and emotional well-being. This study evaluated the effectiveness of music therapy in reducing anxiety levels, blood pressure, and blood sugar among the elderly population residing in an old-age home.
Methodology: A longitudinal pre-post interventional study was conducted among 59 elderly participants aged ≥65 years residing in an old-age home in Bhopal. Baseline assessments included HAM-A Rating Score, Systolic and Diastolic Blood Pressure (BP), Random Blood Sugar (RBS), HbA1c, Heart Rate (HR), and SpO_2. Participants received daily 30-minute evening sessions of Indian classical music (Raga Darbari and Raga Anandabhairavi) for 12 weeks. Weekly monitoring was performed for HAM-A Rating Score, BP, RBS, HR, and SpO_2; HbA1c was reassessed at 12 weeks. Data were analyzed using a paired-samples t-test.
Results: Significant improvement was observed across all parameters after 12 weeks of music therapy. HAM-A Rating Score showed a marked reduction (p <0.001; dz = 3.85), indicating substantial anxiety relief. Systolic and Diastolic Blood Pressure decreased significantly (p <0.001; dz =1.55 and dz = 0.76, respectively). Heart Rate demonstrated a large reduction (p <0.001; dz =4.94), while SpO_2 increased significantly (p <0.001; dz = −0.54). RBS (p <0.001; dz =2.40) and HbA1c (p <0.001; dz = 1.78) showed meaningful improvements in glycemic parameters.
Conclusion: Music therapy produced significant reductions in anxiety, blood pressure, heart rate, and blood sugar, along with improved oxygen saturation. As a safe, noninvasive, low-cost intervention, it serves as an effective adjunct to geriatric care and merits further evaluation through well-designed controlled studies.

Hematology

A Case Series of Venous Thromboembolism: Clinical and Etiopathological Overview

Sounak Kumar Roy, Sandipan Mukherjee
Junior Resident, Ramakrishna Mission Seva Pratishthan Vivekananda Institute of Medical Sciences, Kolkata, West Bengal, India; [2]Assistant Professor, Ramakrishna Mission Seva Pratishthan Vivekananda Institute of Medical Sciences, Kolkata, West Bengal, India

Background: Venous thromboembolism includes deep vein thrombosis and pulmonary embolism. Deep vein thrombosis most often occurs in the leg vein but can also develop in the splanchnic, cerebral, and arm veins. One of the factors contributing to venous thrombosis is hypercoagulable state. Hypercoagulable state can be due to inherited thrombophilias or acquired causes like malignancy. The incidence of venous thrombosis is 1–3 individuals per 1000 per year, with a high rate of complications and death.[1]
Methodology: We studied 5 cases of unprovoked venous thromboembolism in a period of 1 year.
Case 1: A 58-year-old female complained of dyspnea, left upper limb swelling with heaviness, facial puffiness, and redness. CT scan revealed a mediastinal mass with Left IJV and SVC thrombosis. Axillary lymph node biopsy revealed T cell lymphoma
Case 2: A 60-year-old female with facial swelling and dyspnea. CT scan showed a right mediastinal mass with brachiocephalic vein thrombosis. Biopsy revealed small cell carcinoma.
Case 3: Patient presented with fever dyspnea and hemoptysis. CECT revealed right pulmonary artery thrombosis. Patient had vit b12 and folate deficiency due to hyperhomocysteinemia.
Case 4: *A 1*9-year-old female presented with chronic headache. MR venogram revealed Right IJV thrombosis. Patient had Protein S deficiency
Case 5: A 50-year-old male presented with left pleuritic chest pain and dyspnea. CECT revealed left descending pulmonary artery thrombosis. Patient had macrocytic changes due to hyperhomocysteinemia
Conclusion: We studied 5 cases of venous thromboembolism. We must find the presence of any inherited thrombophilia or any malignancy in case of unprovoked venous thromboembolism.

Reference

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To Analyze the Clinical Profile and Treatment Outcomes of Patients with Immune Thrombocytopenia (ITP) at a Tertiary Care Hospital

Kothuru Sushanth, Hariprasad S
Raichur Institute of Medical Sciences

Methods: This prospective observational study was conducted over 1 year with 60 adult ITP patients who were symptomatic or had platelet counts below 30,000/mm^3. The standard treatment protocol involved first-line pulse steroid therapy. Non-responders were escalated to second-line treatments, including intravenous immunoglobulin (IVIG), rituximab, or thrombopoietin agonists (Eltrombopag, Romiplostim). Patient response was evaluated based on the cessation of bleeding and improvement in platelet counts.
Results: The study cohort had a mean age of 36.48 years and a significant female predominance (80%). Cutaneous bleeding was the most common manifestation (75%), followed by gum bleeding (26.7%). The mean platelet count at presentation was 12,683/mm^3. First-line steroid therapy resulted in a complete response for 60% of patients. Of the patients requiring second-line therapy, 87.5% responded completely to Rituximab. No mortalities were reported during the 6-month follow-up period.
Conclusion: ITP is most prevalent in young adult females and typically presents with bleeding manifestations. Steroids are effective as a first-line treatment, especially in newly diagnosed cases. For patients with relapsed or refractory ITP, second-line therapies such as Rituximab demonstrate high efficacy, highlighting the importance of prompt and tailored treatment to reduce morbidity.

Study of Prevalence, Risk Factors, Etiology, and Types of Anemia in Men in Kalaburagi

Chandrakala, Syed Mohammed Hussaini
Professor and HOD, Department of General Medicine, Faculty of Medical Sciences, Khaja Bandanawaz University, Kalaburagi, Karnataka, India; Junior Resident, Department of General Medicine, Faculty of Medical Sciences, Khaja Bandanawaz University, Kalaburagi, Karnataka, India

Background: Anemia remains a major global health concern affecting both developed and developing nations, with significant socioeconomic implications. Anemia among adult men is often under-recognized and under-reported. The condition may be a marker of underlying chronic disease or nutritional deficiencies. The present study was designed to study the prevalence, risk factors, etiology, and types of anemia in men.
Aim of the study: To determine the prevalence, risk factors, etiological profile, and types of anemia in adult men.
Materials and methods: This was a hospital-based, cross-sectional, observational study conducted in the Department of General Medicine, over a period of 6 months from 1st December 2024 to 30th May 2025. A total of 500 adult male individuals aged ≥ 14 years were screened for anemia along with a detailed history. Complete blood hemogram was performed using an automated hematology analyzer. Patients were classified to have mild, moderate, and severe anemia according to WHO criteria. MCV indices were used to classify types of anemia into microcytic, macrocytic, and normocytic anemia.
Results: Out of 500 adult male individuals, 240(48%) were anemic. The mean age of anemic individuals was 44.3 years. The most commonly affected age group was 36 - 75 years (67.1%). Out of 240 individuals 118(49.2%) had mild anemia, 94(39.2%) had moderate anemia and 28(11.7%) had severe anemia. The history of smoking, tobacco chewing, tea consumption of more than 3 cups per day, and alcohol consumption was present in 25%, 22.1%, 31.3% and 6.3% respectively. 15.4% had no identifiable risk factors. Nutritional anemia accounted for the largest proportion (48.6%) of cases, followed by pulmonary disease (17.1%), kidney disease (11.7%), liver disease (8.3%), and bleeding due to various causes (8.3%). 64.1% of individuals had normocytic, 29.6% had microcytic, and 6.3% had macrocytic anemia. This emphasizes the dual contribution of nutritional and chronic disease–related anemia in this population.
Conclusion: In India, like women, nutritional deficiencies are the leading causes of anemia in men because of their unhealthy habits. Routine anemia screening among men, especially elderly individuals and those with chronic illnesses, should be incorporated to improve early detection and reduce disease burden.

Keywords: Adult men, Anemia, Etiology, India, Prevalence, Risk factors

Clinical Profile, Mutational Spectrum, and Treatment Response in Non-chronic Myeloid Leukemia Myeloproliferative Neoplasms: A Prospective Study from a Tertiary Care Hospital in India

Avuthu Guna Vardhan Reddy
Junior Resident, Department of General Medicine, Nizams Institute of Medical Sciences. Hyderabad, Telangana

Background: Myeloproliferative neoplasms (MPNs) are chronic clonal disorders arising from acquired mutations in hematopoietic stem cells, leading to uncontrolled proliferation of one or more myeloid lineages. The classic Philadelphia-negative MPNs—polycythemia vera (PV), essential thrombocythemia (ET), and primary myelofibrosis (PMF)—are unified by constitutive activation of the JAK-STAT signaling pathway, most often through mutations in JAK2, CALR, or MPL genes.
Although these disorders share common molecular underpinnings, they differ in their clinical course, hematologic manifestations, and risk of transformation to acute leukemia

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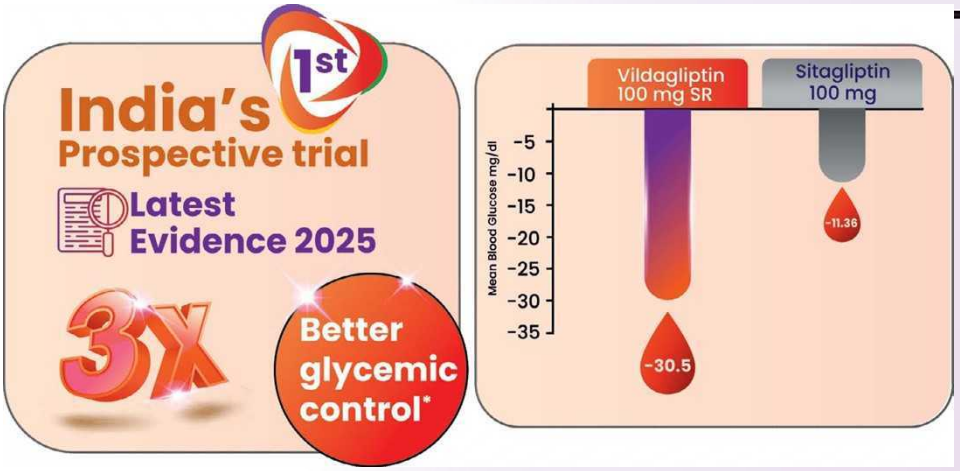

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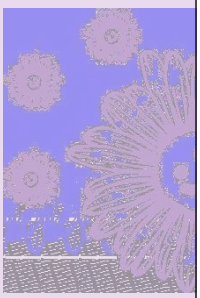

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1.Endocrine Abstracts (2023) 90 EP1106 | DOI: 10.1530/endoabs.90.EP1106
2. American Diabetes Association Professional Practice Committee. Standards of Care in Diabetes—2025. Diabetes Care. 2025 Jan 1;48(Supplement_1):S1-S200
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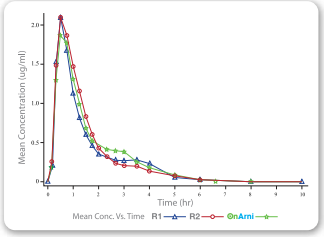

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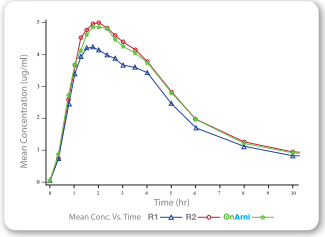

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or secondary myelofibrosis. The incidence and presentation of these diseases in India remain less well characterized compared to Western populations.

This study aimed to describe the clinical and molecular spectrum of non-CML MPNs in Indian patients, evaluate their hematologic and biochemical parameters at presentation, and assess their response to standard treatment regimens such as hydroxyurea, phlebotomy, and supportive therapy over 6 months of follow-up.

Objectives:

- To evaluate the clinical profile, laboratory features, and mutational distribution among patients diagnosed with non-CML MPNs (PV, ET, PMF).
- To assess response to standard therapy at three and six months of follow-up.
- To correlate mutation status with clinical phenotype and treatment outcomes.

Materials and methods: This prospective observational study was conducted at the Department of General Medicine, Nizam's Institute of Medical Sciences, Hyderabad, between January 2023 and December 2024. A total of 50 consecutive patients aged 18 years or older, diagnosed as non-CML myeloproliferative neoplasms according to the 2016 WHO diagnostic criteria, were enrolled. Patients with chronic myeloid leukemia (BCR-ABL positive), secondary erythrocytosis or thrombocytosis, and other myeloid neoplasms were excluded.

Clinical evaluation: Detailed history and physical examination were performed, focusing on constitutional symptoms, history of thrombosis or hemorrhage, pruritus, splenomegaly, and comorbidities such as hypertension and diabetes mellitus.

Laboratory evaluation: Baseline complete blood counts, peripheral smear, liver and renal function tests, lactate dehydrogenase (LDH), uric acid, and erythropoietin levels were measured. Bone marrow aspiration and trephine biopsy were performed in all patients and graded for reticulin fibrosis.

Molecular studies: All cases underwent molecular testing for JAK2 V617F, CALR exon 9, and MPL exon 10 mutations using real-time PCR methodology (QuantStudio™ 5).

Treatment and follow-up: Treatment was individualized based on diagnosis and risk stratification.

- *Polycythemia vera*: Managed with phlebotomy (maintaining hematocrit <45%), hydroxyurea for high-risk cases, and low-dose aspirin (75–100 mg/day).
- *Essential thrombocythemia*: Hydroxyurea and aspirin were used for high-risk patients; interferon-alpha was considered in younger individuals.
- *Primary myelofibrosis*: Hydroxyurea, transfusion support, and symptom-based therapy; ruxolitinib was considered in resistant or advanced cases. Patients were reassessed at 3 months and 6 months for hematological response and symptom improvement.

Results: *Demographic profile*: Of 50 patients, 42 (84%) were males and 8 (16%) females, with an overall mean age of 46.1 ± 13.1 years (range 18–85). The 41–60-year age group constituted the largest proportion (38%).

Distribution of subtypes:

- Polycythemia Vera (PV): 40 patients (80%)
- Essential thrombocythemia (ET): 6 patients (12%)
- Primary myelofibrosis (PMF): 4 patients (8%)

Clinical features: The most common presenting symptom was generalized weakness (18%), followed by pruritus (14%), headache (12%), fatigue (10%), and abdominal fullness (8%) due to splenomegaly.

Thrombotic manifestations (stroke, DVT, Budd–Chiari) occurred in 10%, while hemorrhagic events were recorded in 4%.

Hypertension was the most frequent comorbidity (20%), followed by diabetes mellitus (10%) and gout (6%).

Laboratory findings:

- *Polycythemia vera*: Mean hemoglobin 18.05 gm/dL, hematocrit 55.6%, platelet count 5.3 $\times 10^5$/mm^3, WBC count 11.9 $\times 10^3$/mm^3, serum LDH 234.5 U/L, and uric acid 7.5 mg/dL.
- *Essential thrombocythemia*: Mean platelet count 9.76 $\times 10^5$/mm^3; mild leukocytosis and normal hemoglobin.
- *Primary myelofibrosis*: Mean hemoglobin 7.5 g/dL, LDH 757.5 U/L, and universal splenomegaly.

Bone marrow examination revealed trilineage hyperplasia in PV, megakaryocytic proliferation in ET, and marked reticulin fibrosis (grade 3–4) in PMF.

Molecular profile:

- JAK2 V617F mutation: 76%
- CALR mutation: 14%
- MPL mutation: 4%
- Triple negative: 6%

JAK2 mutation was almost universal in PV (95%), while CALR predominated among ET and PMF.

Treatment response:

At 3 and 6 months, hematologic responses were evaluated:

- PV: Mean Hb decreased from 18.3 to 15.6 gm/dL, platelet count normalized, and symptomatic relief was observed in 85%.
- ET: Platelet count reduced from 9.7 $\times 10^5$ to 6.4 $\times 10^5$/mm^3; headache and erythromelalgia improved in 80%.
- PMF: Mean Hb improved from 7.6 to 9.0 gm/dL; splenomegaly persisted in most patients, but fatigue improved modestly. Hydroxyurea was well tolerated; no significant cytopenia or transformation to leukemia was recorded during follow-up.

Discussion: The present study represents one of the few Indian datasets characterizing the clinical and molecular profile of non-CML MPNs in a tertiary care setting. The median age at diagnosis (46 years) was a decade lower than that reported in Western populations, suggesting earlier disease onset in Indian patients. The male predominance parallels other Asian studies, possibly reflecting genetic and environmental influences.

Molecular landscape: The predominance of JAK2 V617F mutation (76%) aligns with global data showing it as the key pathogenic driver in PV and half of ET/PMF cases. The proportion of CALR (14%) and MPL (4%) mutations also corresponds to international trends. Notably, triple-negative MPNs (6%) were associated with lower counts and poorer therapeutic response, consistent with their known aggressive biology.

Clinical correlations: PV patients had the highest hematocrit, LDH, and uric acid levels, reflecting active erythropoiesis and increased turnover. ET patients had extreme thrombocytosis, while PMF cases showed pancytopenia and splenomegaly. The observation that JAK2-mutated ET patients had higher thrombotic tendency than CALR-positive ones reinforces molecular risk stratification.

Therapeutic outcomes: Hydroxyurea remains the cornerstone of cytoreductive therapy in PV and ET, providing excellent hematologic control and symptom relief. Phlebotomy remains essential for maintaining the target hematocrit in PV. PMF patients, however, showed limited response to hydroxyurea, underscoring the unmet need for JAK inhibitor therapy (e.g., ruxolitinib) and potential early referral for transplant evaluation.

Comparative perspective: When compared to Western cohorts, Indian patients demonstrated similar molecular patterns but relatively higher rates of comorbidities such as hypertension and diabetes, which may accentuate thrombotic risk. Access to mutation testing and novel therapies remains limited in resource-constrained settings, making morphological and biochemical markers critical for diagnosis and monitoring.

Conclusions: Non-CML myeloproliferative neoplasms in Indian patients display distinctive demographic and clinical features with a predominance of JAK2-mutated Polycythemia Vera. Hydroxyurea and phlebotomy remain highly effective in PV, while ET and PMF require individualized therapy guided by risk stratification and mutation profile. Early identification of biochemical markers like LDH elevation and splenomegaly aids timely diagnosis, especially in centers lacking molecular testing. Future research should focus on long-term survival outcomes, transformation risk, and cost-effective incorporation of JAK inhibitor therapy in the Indian healthcare context.

Key findings:

- Mean age: 46 years; male predominance (84%)
- Distribution: PV (80%), ET (12%), PMF (8%)
- Most frequent mutation: JAK2 (76%)
- Common symptom: Weakness (18%)
- PV showed the best hematologic response; PMF the least
- Hydroxyurea remains first-line, safe, and effective

Keywords: Essential thrombocythemia, Hydroxyurea, India, JAK2 mutation, Myeloproliferative neoplasms, Polycythemia vera, Primary myelofibrosis.

Prevalence of Dysglycemia and Correlation between Plasma Glucose and HbA1c in Thalassemia Patients at A Tertiary Care Hospital in North Bengal

T Saha

North Bengal Medical College and Hospital

Introduction: Thalassemia is a common hereditary hemoglobinopathy requiring lifelong transfusions. Repeated transfusions cause progressive iron overload, predisposing to endocrine complications. Among these, dysglycemia from iron deposition in pancreatic β-cells is a major but under-recognized disorder. Early detection is essential to prevent long-term complications.

Objectives: To determine the prevalence of diabetes and prediabetes among thalassemia patients and evaluate the correlation between plasma glucose, HbA1c, and serum ferritin levels.

Methods: An institution-based, cross-sectional study was conducted among 50 male patients (≥12 years) with different forms of thalassemia attending North Bengal Medical College. Fasting plasma glucose (FPG), postprandial plasma glucose (PPG), HbA1c, and serum ferritin were measured. Patients with other causes of diabetes, chronic kidney/liver disease, or corticosteroid use were excluded.

Correlations between glycemic indices and ferritin were analyzed statistically.
Results: The overall prevalence of dysglycemia was 20%. In β-thalassemia major, 17.6% were diabetic and 23.5% prediabetic, while in HbE/β-thalassemia, 7.7% were diabetic and 15.4% prediabetic. Younger patients (<18 years) showed higher glycemic derangements, suggesting early β-cell involvement. Serum ferritin correlated positively with fasting and postprandial glucose ($p < 0.05$). HbA1c was occasionally normal despite dysglycemia, likely due to altered red cell turnover.
Conclusion: Dysglycemia is an early and significant endocrine complication in transfusion-dependent thalassemia, especially β-thalassemia major. Regular glycemic screening with optimal iron chelation is vital to prevent irreversible pancreatic damage

Efficacy and Safety of Concizumab Prophylaxis in Indian Patients With Hemophilia A or B with Inhibitors: Analysis from Phase 3 Explorer 7 Trial

Tulika Seth, Cecil Reuben Ross, Shashikant Apte, Aby Abraham, Vetrivel Babu Nagarajan
Department of Clinical Hematology, All India Institute of Medical Sciences, New Delhi, India; Department of Clinical Hematology, St John's Medical College Hospital, Bengaluru, India; Sahyadri Hospital, Pune, India; Department of Clinical Hematology, Christian Medical College, Vellore, India; Novo Nordisk India Private Ltd., India

Introduction: Despite advances in hemophilia care, managing patients with inhibitors remains challenging. Concizumab, a once-daily subcutaneous anti-TFPI monoclonal antibody, significantly reduced treated bleeding episodes as compared to no prophylaxis in the phase 3 explorer 7 trial in hemophilia A or B patients with inhibitors (HAwI or HBwI). This analysis highlights concizumab's efficacy, safety, pharmacokinetics, and pharmacodynamics in Indian cohort of the trial.
Methodology: The Indian subset ($n = 16$) from the phase 3, explorer 7 trial, conducted across four sites, was analyzed. Eligible participants (≥12 years, ≥25 kg) with HAwI or HBwI received concizumab: loading dose of 1.0 mg/kg, followed by 0.2 mg/kg once daily, with plasma-concentration guided dose adjustment 5 - 8 weeks after the initiation of treatment. Efficacy was assessed at the primary analysis cut-off (PACO) (week 24 for the on-demand (no prophylaxis) arm; week 32 for concizumab arm). Safety, PK/PD, and immunogenicity were evaluated through week 56.
Results: Of 16 Indian participants, enrolled in the explorer 7 trial, 2 were randomized to no prophylaxis (arm 1), 11 to concizumab prophylaxis (arm 2), and 3 patients to arm 4. Seven patients remained on 0.20 mg/kg, seven increased to 0.25 mg/kg. At PACO, mean (SD) annualized bleeding rate (ABR) for treated spontaneous and traumatic bleeding episodes was 2.9 (2.4) and 8.5 (0.2) in patients on concizumab and patients on demand, respectively. In the prophylaxis arm, by week 56, mean ABR remained stable at 2.8 (2.6), and those who later switched to concizumab had an ABR of 0.8 (1.1). SF-36v2 pain and physical function improved from baseline in patients receiving concizumab. Concizumab was well tolerated, mostly with mild and unrelated AEs.
Conclusion: Data from the Indian cohort in explorer 7 trial were consistent with those from the overall population in terms of efficacy and safety. Concizumab reduced ABRs and improved quality of life measures. It was well tolerated, with no thromboembolic or hypersensitivity events reported.
Keywords: explorer 7, concizumab, TFPI

Hepatology

An Observational Study of Serum Calcium in Liver Failure Patients as a Prognostic Marker for Malignancy in Tertiary Care Hospital

Chama Yadavendra Reddy

Background and aims: Abnormal liver function tests (LFTs) and calcium abnormalities can be associated with an increased risk of certain cancers, particularly liver cancer. Studies have shown that both high and low calcium levels, as well as deranged LFTs, can be linked to an increased risk of primary liver cancer. Calcium malnutrition causes a decrease in calcium concentration in extracellular fluid compartments, leading to modulation of calcium-sensing receptor activity. In addition to skeletal disorders, calcium and vitamin D deficits increase the risk of malignancies, particularly of colon, breast and prostate gland. Of these, colon, rectal, breast, gastric, endometrial, renal and ovarian cancer exhibit a significant inverse relationship between incidence and oral intake of calcium. The impairment of signaling from the 1,25(OH)2D3-activated vitamin D receptor (VDR) and from the CaR in vitamin D and calcium insufficiency has been implicated in the pathogenesis of cancer. The combined supplementation is required for optimal chemoprevention of cancer by calcium and vitamin D.
Materials and methods: The present prospective observational study was done in tertiary care hospital from February 2024 to February 2025. A total of 58 patients were collected, and all routine investigations were done. Patients with abnormal LFT were sent for calcium levels. Patients were checked with ionized calcium levels to rule out spurious calcium levels.
Inclusion criteria: (1) All patients above 18 years, (2) All patients with abnormal LFT, (3) All patients with abnormal calcium levels
Exclusion criteria: (1) All patients with previous endocrine disorders, (2) All patients with previous bone disorders.
Results: In our study, out of 58, we had a male preponderance, 45 males, 13 females. In our study, we had 30 patients between 31 and 50 years with abnormal LFT. We had 58 patients with increased SGOT, 56 patients with increased SGPT, and six patients with increased ALP. We had 26 patients with low calcium levels and four patients with high calcium levels. Vitamin D levels were decreased in these patients.
Conclusion: It is observed in our study that abnormal calcium in the presence of abnormal LFT serves as a prognostic marker in the early detection of cancer.

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The Yellow Puzzle: Unraveling the Mystery of Nonresolving Jaundice

Sushmitha S, Umesh G Rajoor
Koppal Institute of Medical Sciences, Bhagyanagar, Karnataka, India

Introduction: Jaundice is a clinical manifestation characterized by yellowish discoloration of skin, sclera, and mucous membranes due to the accumulation of bilirubin in blood and tissues. It typically becomes evident when serum bilirubin exceeds 3 mg/dL. Traditionally, jaundice is classified into three broad categories: prehepatic, hepatocellular, and posthepatic jaundice. In clinical practice, distinguishing between these categories relies on careful evaluation of history, physical examination, biochemical tests, and imaging.
Case report: A 31-year-old female presented to the outpatient department with complaints of yellowish discoloration of the eyes since the past 3 months. She denied any history of diabetes mellitus, hypertension, or alcohol consumption. Her past history revealed that two months earlier, she had visited a private hospital with similar complaints. Laboratory investigations at that time revealed total bilirubin of 24.2 mg/dL, direct bilirubin-13.5 mg/dL, ALT-276 U/L, AST-352 U/L, HBsAg positivity, undetectable HBV DNA, and ultrasonography of abdomen was unremarkable. The patient was diagnosed with acute hepatitis B and initiated on tenofovir therapy, which she continued for 2 months. However, as her symptoms persisted, she sought further evaluation at our center. On general physical examination, she was noted to have icterus, silvery white scaly plaques over the extensor surfaces of upper and lower extremities consistent with psoriasis. Systemic examination revealed no additional abnormalities. Laboratory investigations at presentation showed hemoglobin-9.9 mg/dL, MCV: 101.7 fL, total bilirubin: 39.3 mg/dL, direct bilirubin: 14.1 mg/dL, serum albumin: 3.2 gm/dL, AST: 127 U/L, ALT: 110 U/L, ALP: 78 U/L, prothrombin time: 25 sec and INR: 1.8, HBsAg positivity with undetectable HBV DNA, HIV and HCV-non reactive, serum ceruloplasmin levels-normal, lipid profile-normal, peripheral smear-dimorphic anemia, Ultrasonography and CT abdomen revealed mild fatty infiltration of liver, slit lamp examination-unremarkable. Given the unresolved hepatic dysfunction and presence of associated psoriasis, an autoimmune antibody panel was performed, which revealed significantly elevated titers of LKM-1 antibody. A final diagnosis of autoimmune hepatitis type 2 was established. The patient was initiated on oral prednisolone therapy, following which she

showed dramatic clinical improvement with resolution of jaundice and normalization of liver function tests with total bilirubin of 3.5 mg/dL, AST: 54 U/L, ALT: 67 U/L after 3 weeks of steroid therapy.

Discussion: Autoimmune hepatitis is a chronic, progressive, immune-mediated inflammatory liver disease. The disease can affect all age groups and both sexes, but it has a predilection for females. Epidemiologically, autoimmune hepatitis remains uncommon, with the recent meta-analyses and large reviews estimating the global incidence being 1–2 cases per 1,00,000 person-years. Type 1 autoimmune hepatitis is consistently more frequent than type 2. Based on contemporary estimates of natural history of autoimmune hepatitis, the 10-year survival is 80–98% for treated and 67% for untreated patients. Autoimmune hepatitis is characterized by interface hepatitis on histology, elevated IgG, and the presence of disease-defining antibodies. Type 2 autoimmune hepatitis is defined by presence of LKM-1 and/or anti-LC1 antibodies, which account for a minority of cases and classically present in children or adolescents. The mainstay of treatment in autoimmune hepatitis is glucocorticoids; such therapy leads to symptomatic, clinical, biochemical, and histological improvement as well as increased survival.

Conclusion: Autoimmune hepatitis is a rare but important cause of chronic liver disease, particularly in young patients. This case highlights the importance of considering autoimmune hepatitis in patients presenting with unexplained hepatitis. Early recognition and prompt initiation of corticosteroid therapy can lead to dramatic clinical improvement and favorable outcomes. Given its potential for progression to cirrhosis and liver failure if untreated, awareness of this rare entity and long-term follow-up are essential to optimize patient prognosis.

Prevalence and Outcomes of Spontaneous Bacterial Peritonitis at the Time of Hospitalization in Cirrhotic Patients: A Single-Center Experience

Lelin Kumar Jena, Aniket Ranjan, Partha Sarathi Behera, Deepak Kumar Nayak, Chitta Ranjan Khatua
MKCG Medical College, Berhampur, Odisha, India; MKCG Medical College, Berhampur, Odisha, India

Introduction: Spontaneous bacterial peritonitis (SBP) is a common and life-threatening condition in patients with decompensated cirrhosis (DC). It occurs as a result of intestinal bacterial overgrowth and translocation to the mesenteric lymph nodes. We performed a prospective study to evaluate the spectrum of SBP and its outcomes in hospitalized patients.

Methodology: This study was conducted on consecutive DC patients and patients with ascites who were admitted at MKCG Medical College between April 2023 and the present. Demographic, clinical, laboratory, and endoscopic findings were documented, along with patient outcomes.

Results: Out of 816 patients, 410 (50.2%) had infections, of which 20.4% (n = 83) had SBP. Culture positivity was seen in 14.5% (n = 12) of patients, and *Enterococcus* and *E. coli* were the most commonly isolated organisms. Patients with SBP had increased MELD, MELD-Na^+, CTP score, SAAG, INR, bilirubin, serum urea, and creatinine, and decreased mean arterial pressure, serum sodium, and albumin at the time of hospitalization. They also had an increased prevalence of ACLF-EASL-CLIF (acute-on-chronic liver failure) (53.7% vs 26.5%; $p < 0.001$) and AKI (acute kidney injury) (56.6% vs 24%; $p < 0.001$). Furthermore, they had a prolonged hospital stay (8 days vs 6 days; $p = 0.036$), higher in-hospital mortality (32.5% vs 15.3%; $p < 0.001$), and reduced survival at both 28 days (55.4% vs 75%; $p < 0.001$) and 90 days (34.9% vs 57.4%; $p < 0.001$). Increased MELD score (AUROC: 0.729), MELD-Na^+ score (AUROC: 0.761), and CTP score (AUROC: 0.733) were more strongly associated with SBP.

Conclusions: At our institution, more than half of DC patients had an associated infection at the time of hospitalization, and one-fifth of them had SBP. Advanced liver disease was found to be a risk factor for SBP. They also had a higher proportion of ACLF and AKI, longer hospital stays, an increase in in-hospital mortality, and decreased survival at both 28 days and 90 days.

Diagnostic Accuracy of FIB-4 and FIB-5 in Chronic Hepatitis B

Ishika Gupta, SL Margekar, LH Ghotekar, P Bansal, A Prakash
Lady Hardinge Medical College

Introduction: Chronic hepatitis B (CHB) is a major global health burden, with progression to fibrosis, cirrhosis, and hepatocellular carcinoma being key determinants of morbidity and mortality. While liver biopsy remains the gold standard for staging fibrosis, its invasive nature limits feasibility in routine practice. Non-invasive indices such as FIB-4 and FIB-5, derived from routine biochemical and hematological parameters, provide a potential low-cost alternative for fibrosis assessment. This study aimed to evaluate the diagnostic accuracy of FIB-4 and FIB-5 in comparison to transient liver elastography in patients with CHB.

Materials and methods: The study was conducted between April 2024 and August 2025. Sixty adult patients with chronic hepatitis B, fulfilling inclusion criteria, were recruited. All participants underwent clinical evaluation and routine laboratory investigations following which calculation of FIB-4 and FIB-5 scores was done. Transient liver elastography (TLE) was performed as the reference standard for fibrosis assessment. Sensitivity, specificity, predictive values and diagnostic accuracies were calculated for both indices. Correlation of individual parameters along with the fibrosis scores with significant liver fibrosis was assessed as part of secondary objective of the study.

Results: The mean age of participants was 35.3 ± 13.7 years, with 63.3% males. Significant fibrosis (≥F2) was detected in 35% of patients by TLE. FIB-4 at a cutoff ≥2.461 demonstrated sensitivity 66.7%, specificity 92.3%, AUROC 0.818, and diagnostic accuracy 83.3%. FIB-5 at a cutoff ≤–2.132 showed higher sensitivity (81.0%) but slightly lower specificity (84.6%), with AUROC 0.81 and diagnostic accuracy 83.3%. FIB-4 performed better in ruling in fibrosis, while FIB-5 was superior for ruling out fibrosis.

Conclusion: Both FIB-4 and FIB-5 demonstrated good diagnostic accuracy in assessing significant fibrosis in CHB. FIB-4 was more specific, while FIB-5 showed better sensitivity, highlighting their synergistic roles. Given their simplicity, affordability, and reliance on routinely available tests, these indices can be particularly useful in resource-limited settings, helping in early detection and stratification of fibrosis in CHB patients.

Hyponatremia and Its Correlation with Hepatic Encephalopathy and Severity of Liver Disease in Patients Diagnosed with Chronic Liver Disease in a Tertiary Care Centre

Dasari Sri Harsha, Prabhakar K, Prabhavathi K, Manjunatha N
Sri Devara Urs Institute of Medical Sciences

Background: Hyponatremia is a frequent electrolyte abnormality in patients with Chronic Liver Disease (CLD) and is recognized as an important precipitating and prognostic factor in Hepatic Encephalopathy (HE). Reduced serum sodium causes astrocyte swelling and contributes to cerebral edema, thereby worsening the severity of HE. This study aimed to evaluate the correlation between serum sodium levels and severity of hepatic encephalopathy, and to assess hyponatremia as a prognostic marker in CLD patients.

Methods: This case-control study included 100 CLD patients with overt HE (cases) and 100 CLD patients without HE (controls). Patients were followed over 14 days. Serum sodium levels were measured serially and correlated with West Haven grades of HE, Child-Pugh Class, and MELD score. Patients with sepsis, intracranial pathology, hepatorenal syndrome, or drug-induced hyponatremia were excluded.

Results: Hyponatremia was significantly more common among cases compared to controls. Lower serum sodium levels correlated with more advanced Child-Pugh Class and higher MELD scores ($p < 0.05$). Improvement in serum sodium levels from Day 1 to Day 14 was associated with improvement in West Haven grades of HE ($p = 0.001$). Mortality was highest in patients with serum sodium <120 mEq/L and progressively decreased with higher sodium levels ($p < 0.05$).

Conclusion: Hyponatremia shows a strong inverse relationship with severity of liver disease and hepatic encephalopathy. Serum sodium levels can serve as a reliable prognostic marker in CLD patients, with lower levels indicating higher risk of complications and mortality. Early recognition and correction of hyponatremia may improve clinical outcomes in patients with hepatic encephalopathy.

Correlation between HBV DNA Viral Load and Liver Function Test Parameters in Chronic Hepatitis B Patients: A Cross-sectional Study from India

Ritesh Yadav, Girish Dubey
SRVS Medical College, Shivpuri

Background: Chronic hepatitis B virus (HBV) infection is a global public health concern, particularly in resource-limited settings where access to molecular diagnostics is restricted. Liver function tests (LFTs) offer a practical alternative to monitor hepatic involvement and disease activity. This study aimed to assess the correlation between HBV-DNA viral load and routine liver function parameters among chronically infected HBV patients.

Methods: A descriptive cross-sectional study was conducted at the department, between Start Date and End Date, following ethical approval from the Institutional Ethics Committee. A total of 187 adult patients with confirmed chronic HBV infection (HBsAg positive, age ≥ 18 years) were enrolled. Patients with coinfections or other liver pathologies were excluded. Demographic,

clinical, and laboratory data—including serum ALT, AST, ALP, bilirubin, albumin, and HBV-DNA levels were collected. HBV-DNA was quantified using Truenat®-PCR (Abbott), and LFTs were measured via automated biochemical analyzers. Correlations between viral load and LFT parameters were assessed using Pearson's correlation coefficients.
Results: The mean age of participants was 40.72 ± 15.28 years, with a male predominance (127 males, 60 females). The mean HBV-DNA viral load showed a moderate positive correlation with ALT (r = 0.38, p = 0.001), AST (r = 0.33, p = 0.004), ALP (r = 0.28, p = 0.011), and bilirubin (r = 0.26, p = 0.017). A significant negative correlation was observed with serum albumin (r = –0.30, p = 0.007), indicating impaired hepatic synthetic function with higher viral replication.
Conclusion: Our findings demonstrate that standard liver function tests are significantly correlated with HBV-DNA viral load and may serve as accessible surrogate markers of disease severity and hepatic injury. In settings where molecular testing is limited, LFTs provide a valuable tool for patient monitoring and risk stratification in chronic HBV infection.
Keywords: ALT, Albumin, AST, Chronic liver disease, HBV-DNA, Hepatitis B virus, Hepatitis monitoring, India, Liver function tests, Viral load.

Hypertension

Real World Data of Telmisartan + Metoprolol + Amlodipine FDC in Hypertensive Patients Across Various Clinics in India

Shatakshi Rai
Glenmark Pharmaceuticals Limited

Background: Hypertension remains a leading modifiable risk factor for cardiovascular disease, particularly in patients with coexisting coronary artery disease (CAD). This study evaluates the real-world use of a fixed-dose combination (FDC) of Telmisartan, Metoprolol, and Amlodipine (TMA) in Indian hypertensive patients with CAD.
Methodology: A retrospective, open-label, single-arm, multi-centric observational study across 280 Indian sites reviewed data from 1.379 hypertensive patients on TMA FDC therapy. Following ethics approval, patient data were collected and analyzed using a structured proforma in the Electronic Case Report Form, focusing on demographics, blood pressure (BP), laboratory parameters, comorbidities, and medications.
Results: Among 1379 patients, 72.23% were male while 27.77% were females, with a mean age of 58.00 ± 10.04 years and mean weight was 74.14 ± 11.15 kg Most patients were treatment-naïve (78.39%), while 21.61% had transitioned from other antihypertensive due to inadequate BP control (17.4%), CAD diagnosis (12.69%), individual components of TMA FDC (11.97%) and adverse Drug Reactions to previous medications (6.38%). The most prescribed strength of the FDC was 40 mg + 50 mg + 5 mg (52.14%). Mean pulse rate was 86.99 ± 10.70 beats per minute, mean systolic and diastolic BP were 160.86 ± 18.61 mmHg and 92.29 ± 9.77 mmHg, respectively. Common comorbidities included diabetes (46.99%), CAD (44.45%), and obesity (34.74%). Laboratory assessments revealed a mean HbA1c of 7.05 ± 1.33%, a mean UACR of 35.21 ± 33.52 mg/gm, a mean eGFR of 77.92 ± 31.37 ml/min/1.73 m^2, mean total cholesterol of 209.61 ± 42.96 mg/dL, a mean LDL Cholesterol 120.57 ± 54.93 mg/dL, and mean Triglycerides was 170.67 ± 68.88 mg/dL.
Conclusion: The Telmisartan + Metoprolol + Amlodipine FDC was mostly initiated in treatment naïve patients with stage II–III hypertension and comorbidities like diabetes and CAD, reflecting a clinical preference for simplified management of complex cases.

An Observational Study on the Delta Abdominal Circumference in Systemic Hypertension

N Chowta K, Aman Siddiqui

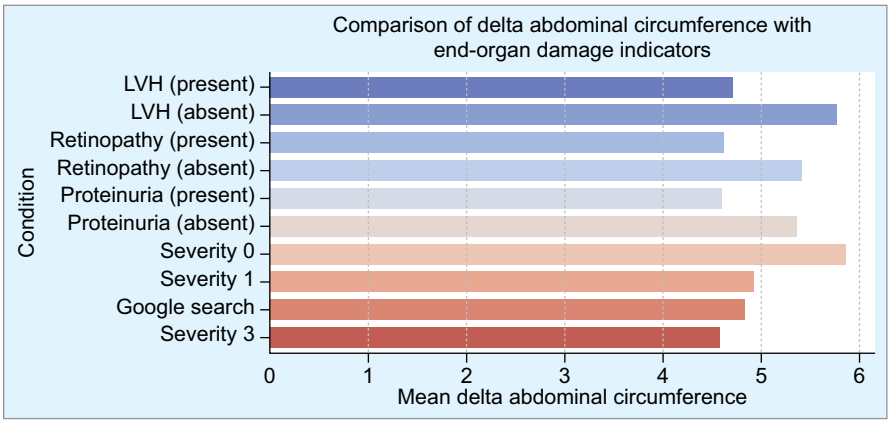
Professor, Department of Internal Medicine, Kasturba Medical College, Mangaluru, Karnataka, India

Background: Delta abdominal circumference (ΔAC) reflects abdominal wall compliance and may correlate with systemic vascular stiffness in hypertension. This study evaluates the association between ΔAC and hypertension severity.
Methods: Adult hypertensive patients were assessed for ΔAC and hypertension-mediated organ damage (HMOS): left ventricular hypertrophy on ECG, hypertensive retinopathy, and microalbuminuria. Severity was scored 0–3 based on the number of organ damage markers. Associations were tested using Mann–Whitney U and ANOVA.
Results: A total of 174 participants were included: males 113 (65%), females 61 (35%). LVH was present in 125 (74%), absent in 45 (26%). Hypertensive retinopathy was observed in 55% of patients. Proteinuria (microalbuminuria) was found in 51% of the cohort. Patients with LVH, retinopathy, or proteinuria showed significantly lower ΔAC values (p < 0.05). Increasing hypertension severity (0–3 organ damage markers) demonstrated a progressive decline in ΔAC. No significant variation in ΔAC with age was observed, while males had slightly higher ΔAC than females.
Conclusion: Delta abdominal circumference is strongly associated with hypertension severity and organ damage. ΔAC may serve as a simple clinical tool for identifying high-risk hypertensive patients.

Table 1: Summary statistics of demographic and baseline characteristics

Parameters	*N*	*Mean ± SD*
Hypertension patient profile at the time of prescription		
Pulse rate (beats/min)	1,379	86.99 ± 10.70
Systolic blood pressure (mm/Hg)	1,379	160.86 ± 18.61
Diastolic blood pressure (mm/Hg)	1,379	92.29 ± 9.77
Glycemic Parameter		
HbA1c (%)	1,040	7.05 ± 1.33
Renal Biomarkers		
UACR (mg/gm)	809	35.21 ± 33.52
eGFR (mL/min/1.73m$^{2)}$	809	77.92 ± 31.37
Lipid Profile		
Total cholesterol (mg/dL)	851	209.61 ± 42.96
LDL cholesterol (mg/dL)	851	120.57 ± 54.93
Sr. triglycerides (mg/dL)	851	170.67 ± 68.88

N, total no. of patients enrolled (N =1,379); SD, Standard Deviation



Clinical Spectrum of Young Hypertensive Patients in North India: A Hospital Based Prospective Observational Study

Md Habib ur Rahman
Jawaharlal Nehru Medical College, AMU, Aligarh, Uttar Pradesh, India

Introduction: Hypertension is increasingly prevalent among young adults in India, with secondary causes playing a significant role in this demographic. Early recognition of the etiological and clinical spectrum is crucial for timely diagnosis and effective management.
Objectives: To evaluate the clinical characteristics, etiological patterns, and biochemical profiles of young hypertensive patients, with focus on secondary hypertension and ambulatory blood pressure monitoring (ABPM) profiles.
Materials and methods: This was a cross sectional, observational study conducted in a tertiary care hospital in North India, involving 239 hypertensive patients aged 18–40 years. Data on demographics, clinical staging, BMI, metabolic syndrome, lipid profiles, drug usage, target organ damage and ABPM were collected. Statistical analysis was performed using chi-square and *p*-values, with significance set at $p < 0.05$.
Results: Of the 239 patients, 77.8% had primary and 22.2% had secondary hypertension. Secondary hypertension was significantly more common in younger age groups ($p = 0.0005$), and was associated with a higher requirement for multiple antihypertensive agents ($p = 0.0005$) and increased risk of target organ damage ($p = 0.0005$). Metabolic syndrome was significantly associated with higher BMI categories ($p = 0.0001$), as were parameters of dyslipidemia. Renal parenchymal disease (41.5%) was the most common secondary cause, followed by endocrine and renovascular disorders. ABPM revealed abnormal dipping patterns in over 50% of patients, with non dipping status significantly associated with secondary hypertension ($p = 0.0005$).
Conclusion: Secondary hypertension represents a substantial burden among young hypertensives and is often accompanied by greater disease severity, target organ damage, and ABPM abnormalities. Comprehensive evaluation, including etiological screening and biochemical profile, should be emphasized in the diagnostic workup of young hypertensive individuals to optimize outcomes and prevent long term complications.
Keywords: Young hypertension; Secondary hypertension; Ambulatory blood pressure monitoring; Dipping pattern; Metabolic syndrome; Target organ damage; Renal parenchymal disease; Etiology; India; Cross-sectional study

Awareness of Uncontrolled Hypertension in Indian Clinical Settings

Sneha Thakur, Indranil Purkait, Anil Pareek
Ipca Laboratories Pvt Ltd

Introduction and background: This survey aimed to get insights on the awareness of uncontrolled hypertension by studying BP control, number of medications used and associated comorbidities.
Methodology: A cross-sectional survey was conducted between January 2023 and December 2024 across 26 states and 2 union territories of India involving 13,104 clinicians. Data from 89,329 patients was collected through a digital mobile app using a validated screening questionnaire and analyzed using percent analysis method.
Results: The study found that 41% (N = 19,143) of patients had uncontrolled hypertension (as defined by Indian Society of Hypertension: SBP ≥140 mm Hg). Most of the known hypertensives (54%) were on single drug therapy, followed by 25% on dual, 18% on triple and 3% on no drug therapy. Most commonly used drug class for single drug therapy was ARB (80%); for dual therapy was ARB + CCB (68%); for triple drug therapy was ARB/ACEi + BB + CCB (43%) followed by ARB + CCB + Diuretic (27%). ASCVD and stroke were the most associated comorbid conditions at 46% followed by type 2 diabetes in 21% and other comorbidities in 33% patients.
Conclusion: Results showed that despite having higher threshold of BP targets (140/90 mm hg); 2/5th of patients had uncontrolled hypertension, which is line with the existing Indian data. ARBs are the most commonly used drug class for monotherapy, dual and triple drug therapies. Despite, strong guideline recommendations, there is a significant clinical inertia in initiating diuretics as 1st and/or 2nd line therapy.
Keywords: Hypertension; India; anti-hypertensive therapy; comorbidity

Management Patterns in Hypertension with Elevated Heart Rate and CAD/IHD: A National Clinician Survey

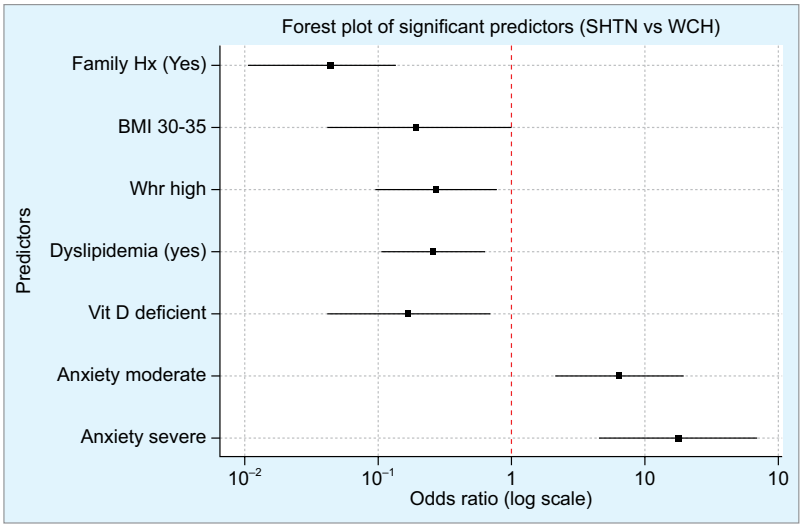
Parikshit Mishra, Kapil Mehta
JB Chemicals and Pharmaceuticals, Gurugram, Haryana, India

Background: Hypertension commonly coexists with coronary artery disease/ischemic heart disease (CAD/IHD) and elevated heart rate, requiring integrated treatment strategies. Real-world prescribing patterns for beta-blocker-based fixed-dose combinations (FDCs) in India are not well documented.
Methods: Cross-sectional, questionnaire-based online survey among 85 clinicians managing hypertension. A pre-validated questionnaire captured preferences for antihypertensive classes, beta-blocker selection, FDC choices, and their use in specific patient groups. Data were summarized descriptively.
Results: Most clinicians reported that 30–50% of hypertension patients present with elevated heart rate (80%) or CAD/IHD (86%). ACE inhibitor/ARB monotherapy was preferred initial therapy for hypertension with CAD/IHD (58.82%), followed by beta-blockers (16.47%). ARB + beta-blocker FDCs were most preferred (50.59%), especially among cardiologists, while calcium channel blocker + beta-blocker FDCs were next preferred (32.94%). Bisoprolol was the most preferred beta-blocker overall (51.76%), followed by metoprolol (29.41%). For cilnidipine-based FDCs, metoprolol (32.94%) and bisoprolol (28.24%) were preferred. The cilnidipine + metoprolol FDC was most frequently used in hypertension with cardiovascular comorbidities (72.94%), particularly among consulting physicians (87.10%).
Conclusion: Clinicians show strong pattern of use for beta-blocker-based regimens, particularly ARB + beta-blocker and cilnidipine-based FDCs, for managing hypertension with CAD/IHD or elevated heart rate. Bisoprolol and metoprolol are the preferred beta-blocker choices, supporting the role of dual-mechanism FDCs in complex cardiovascular hypertension profiles.

Study of Prevalence and Risk Factors of White Coat Hypertension in an Urban Healthcare Setup Using Ambulatory Blood Pressure Monitoring

Mohan KV

Introduction: White coat hypertension(WCH) refers to raised clinic BP with normal home values, often misdiagnosed as Sustained Hypertension(SHTN). Ambulatory BP monitoring(ABPM) improves diagnostic accuracy. This study assessed the predictors of WCH.
Methodology: A cross sectional study of 100 newly detected hypertensive adults. Office BP, anthropometry, biochemical tests and anxiety scores were recorded. All underwent 24 hour ABPM.
Results: WCH prevalence was 29%, while 71% had SHTN. Age, gender, smoking, eGFR showed no significant association. Anxiety was the strongest predictor of WCH; severe anxiety increased likelihood of WCH by 17-fold. SHTN was significantly associated with family history of SHTN, high waist-hip ratio, dyslipidemia and vitamin D deficiency.45% of WCH subjects showed a nondipping pattern.



Factors listed to the right of OR =1 are risk factors for WCH

Conclusion: Nearly one third of newly diagnosed hypertensive individuals had WCH, highlighting the risk of misdiagnosis based on office BP alone. WCH was primarily anxiety driven while SHTN demonstrated metabolic and familial predictors. ABPM plays vital role in accurate classification and prevention of unnecessary pill burden. Longitudinal follow-up of WCH, especially nondippers, is recommended.

Infectious Diseases and Tropical Medicine

Characterizing Chikungunya: A Prospective Study of Clinical Symptoms, Laboratory Parameters, and Therapeutic Outcomes in a Tertiary Care Hospital in Western India

Mehek Khanuja, Santosh Kumar SIngh
AFMC, Pune

Background: Chikungunya fever is a re-emerging viral infection of global importance, transmitted to humans by infected Aedes mosquitoes. The disease typically presents with fever, joint pain, and skin rashes. However, recent outbreaks, particularly in India, have highlighted severe complications, including neurological symptoms and co-infections, exacerbating disease severity in high-risk populations.

Objective: This study aims to explore the clinical profile of Chikungunya infection in a tertiary care hospital in Maharashtra, India, and to examine associated complications, comorbidities, and therapeutic outcomes.

Methods: This prospective observational study, conducted from June to September 2024, included 262 RT-PCR or IgM ELISA-confirmed Chikungunya patients. Patients were included if they presented with acute febrile illness, arthralgia/arthritis, with or without rash. Routine investigations included complete blood count, liver and renal function tests, and screening for co-infections like dengue and leptospirosis.

Results: Of the 262 patients, 170 (64.9%) were male, and with a mean age of 35 years. Fever and symmetrical polyarthralgia were seen in 100% of patients, primarily affecting small joints. Skin lesions were present in 70%, with maculopapular rashes being the most common. Laboratory findings included leukopenia in 46.9% and thrombocytopenia in 56.9% of cases. Co-infections with tropical diseases were noted in 5.5% of patients. Severe neurological complications were rare but included one case of fatal encephalitis and another of cerebellitis successfully treated with IVIG.

Conclusion: Chikungunya remains an under-recognized public health threat, with significant morbidity, particularly in high-risk populations with chronic diseases. The emergence of more severe forms of the disease, including neurological complications, highlights the need for vigilant diagnosis, timely supportive care, and robust vector control strategies. Mortality is rare, but chronic symptoms, especially musculoskeletal involvement, persist in a significant number of patients, impacting quality of life.

Keywords: Chikungunya, CHIKV, complications, arthritis, enthesitis, tenosynovitis, encephalitis, cerebellitis

Re-emergence of Adult Measles: Re-enforcement of Adult Immunization

Dhiraj Kumar Thakur
15 Air Force Hospital

Introduction: Measles, an acute and extremely contagious disease, is caused by the morbillivirus. Adult-onset measles has reemerged as a significant public health concern in India due to waning immunity, overlooked immunizations, and inadequate catch-up immunization efforts. Timely identification and robust public health intervention are essential for adult measles, which presents with more severe clinical consequences and atypical features.

Case presentation: A 32-year-old unvaccinated male with high-grade fever, conjunctivitis, coryza, and a rapidly disseminating maculopapular rash affecting the face, trunk, extremities, and palms and soles. His exposure to pediatric measles was recorded. Leukopenia, relative lymphocytosis, elevated inflammatory markers (CRP, ESR, ferritin), and abnormal liver enzymes indicated a viral etiology. RT-PCR verified the presence of measles RNA in nasopharyngeal samples. Interstitial pneumonia was identified on the chest radiograph. Isolation, supportive care, vitamin A supplementation, hydration, nutritional support, and prophylactic antibiotics were administered. He achieved complete recovery by day 12, with biochemical indicators returning to normal levels. This case exemplifies the evolving epidemiology of measles in India, with an increased incidence among the youth. Unusual and severe adult measles complications encompass hepatic impairment and respiratory involvement. Clinicians must consider and conduct testing utilizing serology and PCR. Treatment is supportive in the absence of specific antivirals. It underscores the imperative for adult vaccination, prompt diagnosis, and public health readiness.

Conclusion: In summary, adult-onset measles is inadequately acknowledged in India. To mitigate transmission and its repercussions in adults, surveillance, prompt case identification, catch-up vaccination initiatives, and the education of healthcare professionals are crucial

Evolution of Therapeutic Trials in Visceral and Dermal Leishmaniasis: Real-world Applications and Outcomes

R Kumar, K Pandey
ICMR-Rajendra Memorial Research Institute of Medical Sciences, Patna

The therapeutic landscape of leishmaniasis has evolved remarkably over the past century, transitioning from anecdotal case reports to rigorously designed randomized controlled trials and, more recently, real-world observational studies. This manuscript traces the historical trajectory of drug development for visceral leishmaniasis (VL), post-kala-azar dermal leishmaniasis (PKDL), and cutaneous leishmaniasis (CL), highlighting the challenges of drug resistance, toxicity, and regional variability in efficacy. Key advances include the introduction of liposomal amphotericin B, miltefosine, and paromomycin, alongside emerging combination regimens that offer safer and shorter treatment courses. For PKDL, prolonged therapy, declining efficacy of miltefosine, and concerns over ocular safety underscore the need for alternative regimens and robust clinical trials. CL management remains constrained by methodological weaknesses in existing studies and limited high-quality evidence. Beyond controlled settings, observational databases such as KAMIS (India), SINAN (Brazil), and Médecins Sans Frontières' operational records (Africa) provide crucial insights into patient populations often excluded from clinical research. Future opportunities include genomic sequencing, digital health applications, and pragmatic trial designs to bridge the gap between research efficacy and real-world effectiveness. Collectively, these developments underscore the need for innovative, patient-centered, and regionally tailored approaches to advance leishmaniasis therapeutics and sustain elimination efforts.

Study of Microbial Flora in Acute Exacerbation of COPD and Their Drug Sensitivity Pattern in Suburban Area, Kanyakumari

Prasant HA, Ranjit Jeyasekharan, Joseph Pratheeban, Vijay
Dr Jeyasekharan Hospital & Nursing Home

Background: Chronic obstructive pulmonary disease (COPD) is a heterogeneous lung condition characterized by chronic respiratory symptoms due to abnormalities of the airway and/or alveoli that cause persistent, often progressive, airflow obstruction. Although bacterial infections are the most common cause of Acute Exacerbation of COPD (AECOPD) in a geographic area, other corresponding environmental factors and local patterns are implicated in the patient's outcome.

Objective: To know the most common organisms growing in Acute Exacerbation of COPD and to know the Drug sensitivity pattern of those organisms.

Methods: This cross-sectional study was conducted in a Nursing home, Nagercoil, Tamil Nadu. One hundred and forty-eight patients admitted with Acute exacerbation of COPD were selected by convenient sampling, data were collected retrospectively and statistical significance of the variables were analyzed.

Results: The analysis of these variables with multivariable modelling identified antibiogram table with the highest prevalent ratio for *Klebsiella pneumonia* i.e., 0.6:1, p value of 0.0362 and Odd's Ratio 2.44 indicating Klebsiella as significant pathogen in our study with variable sensitivity to Cephalosporins and Aminoglycosides.

Treatment of Multidrug-resistant Infections: the Current Scenario

Amitav Mohanty
Apollo Hospital, Bhubaneswar

Introduction: Antimicrobial resistance (AMR) stands as an urgent global public health crisis, with multidrug-resistant (MDR) infections representing a particularly critical facet of this threat. MDR is precisely defined as acquired non-susceptibility to at least one agent in three or more distinct antimicrobial categories. As resistance escalates, more severe classifications emerge, including extensively drug-resistant (XDR), which denotes non-susceptibility to at least one agent in all but two or fewer antimicrobial categories, implying susceptibility to only one or two remaining classes. The most dire classification, pan-drug resistant (PDR), signifies nonsusceptibility to all agents across all available antimicrobial categories. A more recent and clinically pertinent definition, "Difficult-to-Treat Resistant" (DTR), has been introduced to characterize pathogens exhibiting resistance to all typical first-line, lower-toxicity agents, specifically encompassing beta-lactams (including carbapenems and beta-lactamase inhibitor combinations) and fluoroquinolones. This progressive evolution in resistance definitions underscores the escalating clinical complexity and diminished therapeutic options presented by these formidable organisms. The very act of refining these definitions reflects a worsening clinical reality, where the challenge extends beyond merely identifying resistance profiles to grappling with the practical implications of severely limited, often more toxic or costly, treatment choices. This shift

in terminology emphasizes the critical impact on patient management and outcomes, highlighting that the "strength" of resistance is not solely about the number of drug classes affected, but critically about the availability and tolerability of effective therapies.

The global burden imposed by AMR is staggering. In 2019, AMR was directly implicated in at least 1.27 million deaths worldwide and associated with nearly 5 million deaths globally. Within the United States alone, over 2.8 million antimicrobial-resistant infections occur annually, directly contributing to more than 35,000 fatalities. When infections caused by Clostridioides difficile, a bacterium often associated with antibiotic use, are included, the total burden in the U.S. surpasses 3 million infections and 48,000 deaths. On a global scale, the economic cost of AMR is projected to reach an alarming $100 trillion USD by 2050, with low- and middle-income nations disproportionately bearing the brunt of this immense financial burden. The COVID-19 pandemic further exacerbated the AMR crisis, leading to a notable 20% increase in six bacterial antimicrobial-resistant hospital-onset infections in the U.S. by 2021. This alarming trend reversed prior progress in combating AMR, underscoring the inherent fragility of antimicrobial effectiveness when confronted with widespread healthcare disruptions and a surge in antibiotic utilization.

Mechanisms of multidrug resistance: Understanding the mechanisms by which bacteria develop and disseminate resistance is crucial for devising effective treatment strategies. These mechanisms are diverse and can involve various molecular pathways. Key mechanisms include[1–3]:

- Enzymatic Inactivation: Bacteria produce enzymes that directly inactivate antibiotics. A prime example is the production of β-lactamases, which hydrolyze the β-lactam ring of penicillin, cephalosporins, and carbapenems, rendering them ineffective. Carbapenem-resistant Enterobacteriaceae (CRE) are a significant concern, often producing carbapenemases like KPC, NDM, and OXA-48, which confer resistance to a broad spectrum of β-lactam antibiotics.
- Target Modification: Bacteria can alter the molecular targets of antibiotics, reducing or eliminating the drug's binding affinity. Methicillin-resistant *Staphylococcus aureus* (MRSA) achieves resistance to β-lactams by acquiring the mecA gene, which encodes a modified penicillin-binding protein (PBP2a) with low affinity for β-lactam antibiotics. Similarly, vancomycin-resistant Enterococci (VRE) modify their cell wall precursors, preventing vancomycin from binding effectively.
- Efflux Pumps: These are active transport systems that pump antibiotics out of the bacterial cell, thereby preventing them from reaching their intracellular targets at inhibitory concentrations. Many Gram-negative bacteria possess broad-spectrum efflux pumps that can extrude multiple classes of antibiotics, contributing significantly to MDR phenotypes.
- Reduced Permeability: Alterations in bacterial outer membrane proteins (porins) can decrease the influx of antibiotics into the cell, particularly in Gram-negative bacteria. This mechanism can contribute to resistance, especially against larger, more hydrophilic antibiotics.
- Biofilm Formation: Bacteria can form biofilms, which are communities of microorganisms encased in an extracellular polymeric substance. Biofilms provide a protective barrier, reducing antibiotic penetration and increasing bacterial tolerance to antimicrobial agents.
- Mutations and Gene Transfer: Random mutations in bacterial DNA can lead to resistance, which can then be selected for under antibiotic pressure. Furthermore, resistance genes can be readily transferred between bacteria through horizontal gene transfer mechanisms such as conjugation, transformation, and transduction, leading to rapid dissemination of resistance across different bacterial species.

Current treatment strategies: Treating MDR infections is inherently complex, often requiring a multifaceted approach due to limited therapeutic options and the need to balance efficacy with toxicity. The choice of antimicrobial agents is guided by susceptibility testing, clinical severity, patient factors, and local epidemiology.

Novel antimicrobial agents: The development of new antibiotics is crucial in the fight against MDR. Recent years have seen the approval of several novel agents, primarily targeting resistant Gram-negative bacteria, which are often the most challenging to treat [4, 5]:

- *Ceftazidime/avibactam (CZA):*This combination consists of a third-generation cephalosporin and a novel β-lactamase inhibitor. Avibactam inhibits a wide range of β lactamases, including Ambler class A (e.g., KPC), class C (AmpC), and some class D (OXA-48-like) carbapenemases. It is a valuable option for infections caused by CRE and certain Pseudomonas aeruginosa strains.
- *Meropenem/vaborbactam (MVB):*This combination pairs a carbapenem with vaborbactam, a novel β-lactamase inhibitor that specifically targets KPC carbapenemases. MVB has demonstrated efficacy against KPC-producing Enterobacteriaceae, including those resistant to other carbapenems.
- Imipenem/relebactam (IMR): Combining imipenem (a carbapenem) with relebactam (a β-lactamase inhibitor) provides activity against KPC-producing Enterobacteriaceae and AmpC-producing Pseudomonas aeruginosa. Relebactam broadens the spectrum of imipenem by protecting it from hydrolysis by these enzymes.
- *Cefiderocol (FDC):*A siderophore cephalosporin, cefiderocol utilizes bacterial iron transport systems to gain entry into the periplasmic space of Gram-negative bacteria, bypassing common resistance mechanisms like porin mutations and efflux pumps. It exhibits broad-spectrum activity against a wide range of resistant Gram-negative pathogens, including carbapenem-resistant Acinetobacter baumannii (CRAB), carbapenem-resistant Pseudomonas aeruginosa (CRPA), and CRE.
- *Sulbactam/durlobactam (SUL-DUR):*This novel combination specifically targets carbapenem-resistant Acinetobacter baumannii-calcoaceticus complex (CRAB), including those with sulbactam resistance. Durlobactam acts as a potent β-lactamase inhibitor.
- *Eravacycline:*A fluorocycline antibiotic, eravacycline is a newer tetracycline derivative with broad-spectrum activity against many Gram-positive, Gram-negative, and anaerobic bacteria, including some MDR strains. It is approved for complicated intra-abdominal infections (cIAI).
- *Delafloxacin:*A novel fluoroquinolone, delafloxacin has enhanced activity against MRSA and some Gram-negative bacteria, including Pseudomonas aeruginosa. It is approved for acute bacterial skin and skin structure infections (ABSSSI) and community-acquired bacterial pneumonia (CABP).
- *Plazomicin:*A novel aminoglycoside, plazomicin is designed to overcome many common aminoglycoside-modifying enzymes. It is approved for complicated urinary tract infections (cUTI), including pyelonephritis, and has shown promise in treating CRE infections.

Repurposing and optimizing older agents: While novel agents are vital, older antibiotics, often considered "last-resort" drugs, are experiencing a resurgence in use, sometimes in combination therapies, to tackle MDR infections.[6]

- *Polymyxins (colistin and polymyxin B):*These agents, previously associated with significant nephrotoxicity and neurotoxicity, are crucial for treating infections caused by highly resistant Gram-negative bacteria, particularly CRAB and some CRE. Optimal dosing and therapeutic drug monitoring are essential to maximize efficacy and minimize adverse effects. The emergence of plasmid-mediated colistin resistance (MCR-1 gene) is a serious concern.
- *Aminoglycosides:*While traditional aminoglycosides (gentamicin, amikacin, tobramycin) face increasing resistance, they are still used, often in combination, for their synergistic effects.
- *Tigecycline:*A glycylcycline, tigecycline is active against many MDR Gram-positive and Gram-negative bacteria, including some CRE and CRAB. However, its use is cautioned for bloodstream infections and ventilator-associated pneumonia due to a potential increase in mortality compared to other regimens, and higher dosages may be needed for adequate penetration in certain infections.[6]
- *Fosfomycin:*This old antibiotic with a unique mechanism of action remains a valuable oral option for uncomplicated urinary tract infections, and intravenous fosfomycin is being explored for systemic MDR infections, often as part of combination therapy.
- *Combination therapy*: For highly resistant infections, combination therapy is often employed to achieve synergistic effects, prevent the emergence of further resistance, and improve clinical outcomes.[7] The rationale behind combining antibiotics is to target multiple bacterial pathways or to use agents that enhance each other's activity. Examples include:
  - Carbapenem-sparing regimens for CRE.
  - Combinations for CRAB (e.g., colistin with a carbapenem or sulbactam).
  - Dual β-lactam combinations for certain difficult-to-treat pathogens.

Role of rapid diagnostics: Timely and accurate diagnosis is pivotal in managing MDR infections. Rapid diagnostic tests (RDTs) can identify pathogens and their resistance mechanisms much faster than conventional culture-based methods, allowing for prompt initiation of appropriate, targeted therapy. This can significantly impact patient outcomes by reducing the time to effective treatment and curbing the unnecessary use of broad-spectrum antibiotics, thereby minimizing selective pressure for resistance [8].

Challenges in management: Despite advancements, significant challenges persist in the treatment of MDR infections:

- *Limited therapeutic options*: For extensively drug-resistant (XDR) or pan-drug-resistant (PDR) strains, treatment options can be extremely limited or non-existent, leading to high mortality rates.
- *Toxicity of available drugs*: Many effective anti-MDR agents, like polymyxins, carry a significant risk of toxicity, necessitating careful monitoring and dose adjustments, especially in critically ill patients.
- *Pharmacokinetic/pharmacodynamic (PK/PD) considerations*: Critically ill patients often experience altered PK/PD profiles, which can lead to suboptimal drug exposures and treatment failures if not properly accounted for. Therapeutic drug monitoring (TDM) can help optimize dosing for certain agents.
- *Diagnostic delays*: While RDTs are emerging, access to and implementation of these technologies remain a challenge in many settings, leading to delays in appropriate therapy.
- *High healthcare costs*: The development and use of novel antibiotics are often associated with high costs, posing a barrier to access, particularly in resource-limited settings.
- *Emergence of new resistance*: The dynamic nature of AMR means that new resistance mechanisms constantly emerge, challenging the longevity of even the newest antibiotics.
- *Biofilm-associated infections*: Infections involving biofilms, such as those associated with medical devices, are notoriously difficult to treat due to reduced antibiotic penetration and bacterial tolerance within the biofilm matrix.

Antimicrobial stewardship and infection control: Effective antimicrobial stewardship programs (ASPs) are indispensable in combating MDR infections.[9] These programs promote the judicious use of antibiotics, optimizing prescribing practices to ensure the right drug, dose, duration, and route of administration. Key components of ASPs include:

- *Surveillance*: Monitoring resistance patterns locally and globally is crucial for informing empiric treatment guidelines.
- *Formulary restriction and pre-authorization*: Controlling the use of broad-spectrum and novel antibiotics.
- *Prospective audit and feedback*: Reviewing antibiotic prescriptions and providing tailored recommendations to prescribers.
- *Education*: Educating healthcare professionals on appropriate antibiotic use, resistance mechanisms, and infection control.
- *Rapid diagnostics*: Integrating RDTs into clinical workflows to guide targeted therapy.

Alongside ASPs, stringent infection control measures are fundamental to preventing the transmission of MDR organisms within healthcare settings. These include strict hand hygiene, isolation precautions, environmental cleaning, and surveillance for healthcare-associated infections.

Future perspectives: The future of MDR infection treatment is likely to involve a combination of novel approaches and a renewed focus on preventative strategies:

- Nontraditional therapies:
  - *Bacteriophage therapy:* The use of bacteriophages (viruses that specifically infect and lyse bacteria) is gaining renewed interest, particularly for highly resistant infections where conventional antibiotics have failed. Phages offer high specificity and the potential to evolve with bacteria.[10]
  - *Antimicrobial peptides (AMPs):* These are natural or synthetic peptides with broad-spectrum antimicrobial activity, often acting by disrupting bacterial membranes. They represent a promising class of compounds with novel mechanisms of action.[10]
  - *Nanotechnology*: Nanoparticles can be engineered to deliver antimicrobials more effectively, disrupt bacterial membranes, or target specific bacterial components, offering a novel approach to overcome resistance.[10]
  - *Immunomodulation*: Strategies that enhance the host immune response to fight infections, rather than directly killing bacteria, are being explored.
- *Vaccine development:* Development of vaccines against key MDR pathogens could significantly reduce the incidence of infections and the need for antibiotics.
- *Inhibitors of resistance mechanisms:* Research into compounds that specifically inhibit bacterial resistance mechanisms (e.g., new β-lactamase inhibitors, efflux pump inhibitors) remains a critical area.
- *Global collaboration*: International partnerships and initiatives are essential for surveillance, data sharing, research and development, and equitable access to new antimicrobial agents. The WHO's Bacterial Priority Pathogens List guides research and development efforts for new antibiotics [11].
- *One health approach*: Recognizing that AMR is a complex issue with interconnected human, animal, and environmental dimensions, a "One Health" approach is crucial, addressing antibiotic use in agriculture and environmental contamination.

Conclusion: Multidrug-resistant infections pose an existential threat to modern medicine, demanding urgent and concerted action. The current scenario for treating MDR infections is characterized by a reliance on newer, often costly, and potentially toxic agents, alongside a resurgence in the use of older drugs, frequently in combination. However, the pipeline for novel antibiotics remains concerningly thin. For postgraduate medical students, physicians, and clinicians, a deep understanding of resistance mechanisms, an informed approach to current therapeutic options, and a steadfast commitment to antimicrobial stewardship and infection control are paramount. The future landscape of MDR infection treatment will likely integrate innovative nontraditional therapies, alongside robust global surveillance and collaborative efforts to preserve the effectiveness of existing and future antimicrobial arsenals.

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A Study of Cardiac Manifestations and its Correlation with CD4 Cell Count in Patients Living with HIV

Soumya Hiregoudar, Neha Sukhani
Raichur Institute of Medical Sciences

Aims and objectives: Human Immunodeficiency Virus (HIV) infection represents a global health challenge. Cardiovascular involvement in HIV is often underrecognized despite multifactorial etiologies such as direct viral effects, opportunistic infections, chronic inflammation, immune dysfunction, and cardiotoxic effects of ART medications. CD4 cell count is a key marker of immune status and may correlate with the severity of cardiac involvement. This study aimed to evaluate cardiac manifestations in patients living with HIV and analyze their association with CD4 count.

Methods: A cross-sectional study on 150 patients attending the ART center at RIMS Hospital between June 2024 and July 2025. Inclusion criteria were HIV-positive individuals aged >18 years. Patients with congenital or rheumatic heart disease were excluded. Clinical evaluation and relevant cardiac investigations were performed and correlated with CD4 cell counts.

Results: Cardiac manifestations were significantly more frequent in patients with CD4 counts <200 cells/μL. The most common abnormalities were left ventricular diastolic dysfunction (30%) and pericardial effusion (28%). These findings highlight the vulnerability of HIV patients to cardiovascular complications.

Conclusion: HIV infected individuals, particularly those with low CD4 counts, are at increased risk for cardiovascular disease. Routine cardiac screening and early intervention may reduce morbidity and mortality in this population.

Patterns and Diagnostic Challenges in Severe Acute Febrile Illness: A Case Series

Shankar S, Baby Shruthi, S Mookambika, C Arul Murugan

Vinayaka Mission Kirupanantha Variyar Medical College Hospital, Salem

Background: Acute febrile illness (AFI) remains a major cause of hospitalization in tropical regions. Overlapping clinical and laboratory features often delay diagnosis and obscure etiology. Understanding local clinical patterns and diagnostic pitfalls is crucial for timely and targeted management.

Aim: To describe clinical, hematological, and etiological trends and highlight diagnostic challenges among hospitalized patients with high-grade AFI.

Methods: A retrospective descriptive case series was conducted among 20 adults admitted with high-grade fever (≥38.5°C) unresponsive to ≥3 days of outpatient therapy between January and October 2025 at a tertiary care centre in Tamil Nadu. Data were extracted from anonymized discharge summaries. Demographic, clinical, and hematological variables were analyzed to identify trends and diagnostic challenges.

Results: Mean age was 37 years with male predominance (14:6). Common symptoms included fever (100%), headache (68%), myalgia (60%), and fatigue (50%). Probable etiologies were viral/viral-like (65%), bacterial (20%), undifferentiated (10%), and scrub typhus (5%) confirmed by IgM ELISA. Mean laboratory findings: Hb 13.7 g/dL, WBC 6.9 × 10^3/µL, platelets 1.85 × 10^5/µL, RDW 16.2%, MCV 70 fL. All patients recovered; mean hospital stay ≈ 4 days.

Conclusion (Learning Points): Most highgrade AFI cases were viral or mild bacterial with good outcomes. A confirmed scrub typhus case highlighted the need for vigilance toward atypical, treatable infections.

Learning points:

1. Persistent fever > 3 days warrants evaluation for rickettsial and atypical causes.
2. Routine CBC indices such as RDW, platelet count, and MCV provide early diagnostic clues.
3. Clinical acumen with targeted testing remains central to AFI management.

Medical Oncology

Quality of Life of Advanced Stage Cancer Patients Presenting to BPKIHS: A Cross-sectional Study

Ashok Kumar Mandal, Robin Maskey, Sonia Dulal

Junior Resident, Department of Internal Medicine, BP Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal; Department of Internal Medicine, BP Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal

This research, entitled "Quality of Life of advanced stage cancer patients presenting to BPKIHS: A cross-sectional study," was conducted to assess the quality of life of advanced stage cancer patients.

It was carried out among patients of BP Koirala Institute of Health Sciences, Dharan, Sunsari, attending the medicine OPD or admitted in medicine wards, and diagnosed with advanced-stage cancer patients.

Background: The advanced stage of a cancer is the stage at which a patient's disease is not amenable to cure, health progressively deteriorates, and survival is not expected by the health professionals providing care. QoL instruments can be used to assess the overall impact of patients' health status on their QoL.

Objective: The primary objective of this study is to assess the quality of life of advanced-stage cancer patients.

Methods: A hospital-based prospective cross-sectional study. A total of 72 patients, the inclusion criteria include adult patients (≥18 years) of advanced-stage cancer patients, exclusion criteria include those who are cognitively impaired and who not giving informed and written consent.

The data was collected by interview, using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ- C30), and information about the disease condition and treatment was obtained from the medical records.

Results: The study findings revealed the quality of life of cancer patients to be influenced by different domains of QOL, clinicodemographic profiles. The average QoL scores (out of 100) for different scales were 45.60 (global health/QoL), 56.08 (functional), and 38.53 (symptom). Among the symptoms, scale fatigue is the most frequent symptom, i.e, 52.00 (SD =21.33). The single item rated the far most problematic is financial difficulties i.e., 55.09 (SD =22.48).

Conclusion: Hence, on average, the quality of life of advanced-stage cancer patients was below the average. The study findings can be used by all health care providers for providing care to people with cancer, as the findings will help to improve their knowledge.

Keywords: Advanced-stage cancer, EORTC QLQ-C30, Quality of Life.

Miscellaneous

A Prospective Analytical Cross-Sectional Study Comparing Efficacy of Different Techniques of Ear Pressure Equalization in Preventing Middle Ear Barotrauma in Patients Undergoing HBOT

Divya Singh

INHS Asvini

This prospective analytical cross-sectional study aimed to compare the efficacy of three different ear pressure equalization techniques—Valsalva, Toynbee, and Frenzel—in preventing middle ear barotrauma (MEB) among patients undergoing hyperbaric oxygen therapy (HBOT). Conducted over a 1-year period, the study involved a total of 130 patients who were equally and randomly assigned into three groups based on the equalization technique taught and practiced. Each patient received standardized instruction and demonstration from trained medical officers and diving team personnel to ensure consistent technique application. The primary outcome measured was the incidence of middle ear barotrauma, assessed through pre- and post-HBOT otoscopic examinations and symptom reporting. Secondary outcomes included patient-reported ease of technique, compliance, and any associated discomfort. Findings revealed significant differences in the efficacy of the techniques. The Toynbee technique group demonstrated the lowest incidence of MEB, followed by the Toynbee group, with the Frenzel group showing the highest rate of barotrauma cases. Patient-reported ease and comfort were also highest in the Toynbee group, indicating better compliance and suitability for repeated HBOT sessions. The results suggest that the Toynbee technique may offer superior protection against middle ear barotrauma in the context of HBOT, likely due to its more controlled pressure regulation and reduced risk of mucosal trauma. These findings have important clinical implications for improving patient safety and comfort during HBOT and support the need for formal instruction in effective equalization techniques, particularly Frenzel, for individuals at risk of barotrauma. Further studies with larger sample sizes and varied demographic groups are recommended to reinforce these findings and guide protocol development in HBOT centers.

Keywords: Ear barotrauma, Ear equalization technique, Frenzel maneuver, Middle ear barotrauma, Toynbee, Valsalva maneuver.

Systemic Complications of IV Drug Abuser Patients in Tertiary Care Hospital

Arkanil Das, Pradip Bhowmik, Parimal Sarkar

Second year PGT, General Medicine; Professor, General Medicine; Assistent Professor, General Medicine

Introduction: The intravenous administration of narcotics and other drugs may frequently result in serious and often life-threatening systemic complications. Drug contaminants and nonsterile injection techniques with resultant infection are responsible for many of these complications.

Objectives: To determine the spectrum and frequency of systemic complications associated with IV Drug use and evaluate their clinical outcomes.

Methods: An observational longitudinal study was carried out over a period of 4 months among indoor patients admitted in the department of medicine of a tertiary care hospital in North Eastern India. The study was conducted on 10 patients with IV drug abuse. Detailed clinical history and physical examinations were done. Standard investigations, including Complete blood count, LFT, KFT, HbsAg, Anti-HCV, HIV ELISA, purified protein derivative, rapid plasma reagin, Chest X-ray, ECG, and, depending on symptoms, HRCT, blood cultures, cardiac biomarkers, sputum analysis, Echocardiogram, Doppler ultrasound, CT or MR angiography, venography, were performed.

Results: The study included 10 patients, all being males, with a mean age of 26.5 years. Common complications include infectious diseases seen in 6 (60%) cases, cardiovascular complications in 5 (50%) cases, pulmonary complications in 4 cases (40%), hematological complications in 2 cases (20%), neurological complications in 2 (20%) cases, hematological in 2 (20%) and gastrointestinal in 9 (90%) cases. Mortality rate was 10%. Patients with infectious diseases have higher mortality than those without.

Conclusion: IV drug abuse is associated with a wide range of systemic complications, emphasizing the need for comprehensive care and multidisciplinary management in these patients

Keywords: Echocardiogram, IV drug abuse, Systemic complications.

A Comprehensive Study on Various Body and Mind Parameters During Prolonged Fasting and Strenuous Physical Exertion

Aadil Khan, Punekar P, RS Sharma

Department of General Medicine, R Mahobia Department of Pathology, Government NSCB Medical College, Jabalpur, Madhya Pradesh, India

Aims and objectives: A Detailed study on the effects of prolonged fasting and strenuous physical

exertion was carried out from May 22, 2024, 8 PM to May 29, 2024, 8 PM at NSCB Medical College, Jabalpur, Madhya Pradesh, India.

Material and method: As per the subject under study, Dada Guruji, actual (name not given for ethical reasons), he stopped taking food from October 17, 2020. He took only a small (approximately 500 mL amount of "Narmada River Water collected from midstream. In the meantime, he either continues his Parikrama around the Narmada River or intermittently stops at few places for worships and religious discourses. He is always under constant companionship and even at times in certain settings under CCTV surveillance. Since he is physically and mentally very active and his general health is excellent, it was decided to conduct a scientific study to objectively assess his physical, mental parameters, biochemical profile, and certain other investigations (ECG, echocardiography, USG abdomen, EEG, etc)

Results: The observation data are analyzed in standard scientific manner, and results procured result details discussed. He was under constant surveillance.

Conclusions: It was concluded that the "subject" did not consume any food substance that could give energy or nutrition. Only approx. 500 cc of Narmada river water was consumed in 24 hrs. Results showed that despite continuous physical activity (daily 25–30 Km walking under summer sun with outdoor temperature 40 - 45°C, he was physically and mentally agile and fit and had no symptoms. His physical, mental, biochemical parameters were mostly in normal range except for a few fluctuating marginal aberrations in blood sugar, S. Creatinine, Uric Acid, S-iron, ferritin (details will be presented). These are expected in a 7-day fast. In our opinion, subject Dada Guru's response to strict fasting coupled with strenuous physical activity is unique and hitherto unreported in world medical literature. Probable mechanisms, our hypotheses (Markedly increased metabolic adaptation and endurance power) are discussed.

Impact of Environmental Conditions and Clinical Parameters on Exertional Heat-Related Disorders: A Cross-sectional Study

Abhishek Kumar, Santosh Kumar Singh, Suman Kumar Pramanik, Anand Menon

AFMC, Pune

Background: Exertional heat disorders (EHDs) are a major occupational health concern among military personnel engaged in strenuous physical activity under high ambient temperatures and humidity. This study aimed to determine the clinical, biochemical, and environmental correlates associated with EHDs during organized military training.

Methods: A cross-sectional observational study was conducted among 6,857 cadets undergoing military training, of whom 116 (1.7%) developed EHDs. Clinical evaluation, environmental assessment, and laboratory investigations, including hepatic, renal, and muscle injury markers, were undertaken. Statistical analyses were performed to assess associations between clinical, biochemical, and environmental variables, with $p < 0.05$ considered significant.

Results: Heat exhaustion accounted for 79.8% of cases, followed by mixed forms (15.6%), heat stroke (3.4%), and heat syncope (0.9%). The highest incidence occurred during Combat Conditioning Runs (43.1%) and Battle Physical Efficiency Tests (36.2%). Mean ambient temperature and humidity were 29.1°C and 85%, respectively. Ambient temperature and distance covered significantly correlated with EHD severity ($p = 0.007$ and $p = 0.014$). Heat stroke cases showed higher core temperature, tachycardia, hypotension, and biochemical evidence of multiorgan involvement, with elevated CK, LDH, AST, ALT, and creatinine levels.

Conclusion: EHDs commonly occur during high-intensity training in hot, humid environments. Elevated environmental temperature and prolonged exertion are key determinants of severity. Preventive strategies such as acclimatization, hydration, and structured work-rest cycles are essential to reduce morbidity and sustain operational readiness among military personnel.

Not Every Fever Needs Antibiotics: A Retrospective Study and Algorithm-based Approach to Noninfectious Fever at a Tertiary Care Hospital, Coimbatore

Sangavi Ramachandran, Prenav Sakthi Kumar

Kongunad Hospitals Private Limited, Coimbatore; Consultant, Kongunad Hospitals Private Limited, Coimbatore

Background: Fever is among the most frequent causes of hospital visits and is often presumed to be infectious. However, a significant proportion of prolonged fevers have non-infectious etiologies, including autoimmune, autoinflammatory, malignancy, and drug-induced conditions. Overreliance on antibiotics for noninfectious causes delays diagnosis and contributes to increased antimicrobial resistance, which is projected to cause more deaths globally by 2050 than COVID-19. This study aims to evaluate the spectrum of noninfectious fever, identify reasons for diagnostic delay, and propose a structured algorithm to guide rational evaluation and antibiotic use.

Methods: A retrospective observational study was conducted in the Department of General Medicine at a tertiary care hospital. A total of 42 patients (interim data $n = 42$) from January to September 2025 during the time of abstract submission, final analysis will include all cases enrolled until January 2026 were included in the study. Adult patients (≥18 years) with noninfectious causes of fever were included. Patients with concurrent infection, known malignancy, and autoimmune diseases were excluded. Data on demographics, duration of fever, prior hospital visits, antibiotic use, criteria met for antibiotics, missed findings at outside hospitals that led to delay in diagnosis, and final diagnosis were analyzed. Based on study observations, a stepwise diagnostic algorithm was developed integrating qSOFA scoring, empirical antibiotic criteria, and systematic evaluation for infectious and noninfectious etiologies.

Results: The mean age of patients was 44.14 years, with a female predominance of ($n = 25$) 59.5%.

The mean duration of fever before diagnosis was 23.7 days.

85.7% ($n = 36$) of patients had received empirical antibiotics prior to admission at our hospital, and among them, 88.8% ($n = 32$) were used inappropriately (criteria for empirical antibiotics—Sepsis, community-acquired pneumonia, ventilator-associated pneumonia, necrotizing fasciitis, febrile neutropenia, meningitis—not met).

Nearly 100% of these patients had received empirical antibiotics without prior blood culture, and in most cases, baseline investigations (CBC, ESR/CRP, urinalysis, and imaging) had not been performed before starting antibiotics, contributing to significant diagnostic delay.

Concordance between outside and tertiary hospital diagnosis was low, as many were initially labeled as infectious but later confirmed as non-infectious.

The most commonly missed findings at primary centers were history 45.4%($n = 15$), lymphadenopathy 51.5%($n = 17$), and splenomegaly 3% ($n = 1$).

The final diagnosis distribution was:

- Autoimmune/connective tissue disorders: 42.8% ($n = 18$)
- Malignancy: 30.9% ($n = 13$)
- Autoinflammatory: 23.8% ($n = 10$)
- Drug induced: 7.1% ($n = 3$)

Algorithm: Evaluation of Fever >5 Days

- Step 1—Initial Assessment

Fever > 5 days

↓

Check qSOFA ≥ 2 and criteria met for empirical antibiotics?

Yes → Start empirical antibiotics

No → Proceed to Thorough history and physical examination

↓

- Step 2—Detailed Evaluation

Thorough history and physical examination (Contact history, drug history, travel history, vegetation exposure, lymph node examination, general survey)

↓

Step 3—Basic Investigations:

CBC, RFT, LFT, Electrolytes, Urinalysis, Chest X-ray, Ultrasound, CRP, Procalcitonin, Culture and Sensitivity, Mantoux test, Peripheral smear

↓

Suspicion of bacterial infection or SOFA ≥ 2?

Yes → Bacterial infection → Targeted cultures and investigations → Start antibiotics

No → Classify as either Non-bacterial infection or Non-infectious causes

- Step 4A—Nonbacterial infections
- Viral
- Fungal
- Parasitic

(Proceed with targeted investigations)

- Step 4B—Noninfectious causes

↓

Repeat history and detailed systemic examination

↓

Classify into:

- Autoimmune diseases
- Malignancy
- Miscellaneous

Autoimmune Diseases

- Connective Tissue Disorders (CTD): SLE (SLICC criteria), Sjögrens (EULAR criteria), systemic sclerosis (EULAR criteria), dermatomyositis, autoimmune hepatitis
- Investigations: ANA, ANA profile
- Arthritis >6 weeks:
- Seropositive: Rheumatoid arthritis → RA factor, anti-CCP (EULAR criteria)
- Seronegative: Psoriatic arthritis, reactive arthritis, ankylosing spondylitis (ASAS criteria), enteropathy-associated arthritis → HLA-B27 positive

Vasculitis:

Large vessel:

- Giant cell arteritis → Temporal artery biopsy, (EULAR criteria)
- Takayasu arteritis → Angiography(EULAR criteria)

Medium vessel:

- Polyarteritis nodosa → Angiography/ Biopsy(ACR criteria)

Small vessel:
- ANCA-positive: Wegener's granulomatosis(ACR criteria), Churg–Strauss(EULAR criteria), Microscopic polyangiitis(ACR criteria)
- ANCA-negative: Behçet's (criteria), Henoch–Schönlein purpura - skin biopsy (Criteria), Cryoglobulinemia (cryoglobulin levels)

Malignancy
- Biopsy
- CT chest and abdomen
- PET-CT

Miscellaneous
- Autoinflammatory diseases: Kikuchi (biopsy), adult-onset still's disease (Yamaguchi criteria)
- Drug fever
- Inflammatory bowel disease: Colonoscopy and biopsy
- Venous thrombosis: Venography
- Sarcoidosis: ACE levels, biopsy

Conclusion: Noninfectious causes of fever are frequently overlooked, leading to unnecessary antibiotic use and diagnostic delay. Implementing a structured algorithmic approach combining clinical judgment, qSOFA scoring, and targeted investigations can improve diagnostic accuracy, reduce antibiotic misuse and promote effective stewardship in prolonged fever evaluation.

Post Tubercular Lung Disease in PLHIV Patients Previously treated for Pulmonary Tuberculosis

Vishwa Varun Katti, S Nath, A Raizada, AK Verma
University College of Medical Sciences and Guru Teg Bahadur Hospital

An estimated 39 million people were living with HIV globally in 2022, with 630,000 deaths attributed to HIV-related causes. India accounts for 24.01 lakh PLHIV, and HIV seropositivity among referrals from the National Pulmonary Tuberculosis Elimination Program stood at 1.29%. Pulmonary tuberculosis (TB), the most common opportunistic infection in PLHIV, contributes to 1 in 5 HIV-related deaths. Even after successful TB treatment, patients may develop post-tubercular lung disease (PTLD), including bronchiectasis, cavitation, COPD, and restrictive lung disease. This study addresses the gap in Indian data on PTLD among PLHIV.

A cross-sectional study was conducted at the ART Clinic of a tertiary care Hospital, enrolling 150 PLHIV previously treated for pulmonary TB. Based on Auld et al. (2021), a sample size of 374 was calculated, but logistical constraints limited recruitment to 150. Data collection included socio-demographics, clinical history, CD4 count, viral load, chest imaging, spirometry, 6-minute walk test, and COPD Assessment Test. Statistical analysis was performed using SPSS v20.0. ANOVA, Mann-Whitney U, independent *t*-tests, and Chi-square tests were applied, with $p < 0.05$ considered significant. Ethical clearance was obtained from the institutional ethics committee, and data confidentiality was maintained.

Among participants (mean age 37.53 ± 11.61 years; 41% males, 61% females), 56.3% had PTLD. Of these, 25% showed obstructive, 28% restrictive, and 3.3% mixed spirometry patterns. A significant difference in 6-minute walk distance and CD4 count was observed between the PTLD and non-PTLD groups. Findings highlight the burden of respiratory impairment in PLHIV and the need for routine post-TB screening. The high prevalence of PTLD indicates that TB cure does not ensure full pulmonary recovery. Integrating spirometry and functional assessments into HIV care may improve long-term outcomes.

Evaluation of Safety Profile and Adverse Drug Reactions of Combined Fluoxetine and Mirtazapine Therapy in Patients with Major Depressive Disorder

Asmita Pandey, Rajkumar Arya
MD Resident, Department of Pharmacology; Professor and Head, Department of Pharmacology

Introduction: Major depressive disorder (MDD) often requires prolonged pharmacotherapy, and many patients show inadequate response to antidepressant monotherapy. Combining agents with complementary mechanisms can enhance therapeutic outcomes. Fluoxetine, a selective serotonin reuptake inhibitor (SSRI), increases serotonergic transmission, while mirtazapine, a noradrenergic and specific serotonergic antidepressant (NaSSA), augments both noradrenergic and serotonergic activity. This combination, sometimes likened to "California rocket fuel," may offer superior efficacy but also raises potential safety concerns due to overlapping pharmacodynamic effects. Hence, a systematic evaluation of the safety and adverse drug reaction (ADR) profile of this combination is essential to ensure tolerability and patient compliance.

Aims and objectives: To assess the safety profile and adverse drug reactions (ADRs) associated with combined fluoxetine and mirtazapine therapy in patients with Major Depressive Disorder (MDD).

Methods: A prospective, interventional, randomized, double-blind study was conducted in 50 patients diagnosed with MDD over a 12-week period. Participants were assigned to receive combined fluoxetine and mirtazapine therapy. All adverse events were recorded at regular intervals, and causality was assessed exclusively using the WHO-UMC scale.

Results: Among the 50 participants, 12 patients (24%) experienced adverse drug reactions. Reported ADRs included sedation (8%), dry mouth (4%), weight gain (4%), nausea (4%), and mild headache (4%). All events were classified as mild to moderate in severity and deemed probable by the WHO-UMC causality assessment. No serious or life-threatening ADRs were observed.

Conclusion: Over 12 weeks, the combination of fluoxetine and mirtazapine showed a favorable safety and tolerability profile in patients with MDD, with an incidence rate of 24% of mild and manageable adverse reactions. Routine monitoring remains advisable to detect and address ADRs.

Keywords: Adverse drug reactions, Double-blind, Fluoxetine, Major depressive disorder, Mirtazapine, Safety study, WHO-UMC scale

Uncoupling the Hemoglobin–Thrombosis Paradigm: Re-exposure Dynamics as a Risk Factor at High Altitude

Maj (Dr) Ravi Kumar, Brig (Dr) Rajan Kapoor
153 General Hospital, Leh

Background: High-altitude thrombosis has long been attributed to altitude-induced erythrocytosis and blood hyperviscosity. However, not all individuals with elevated hemoglobin develop thrombotic events, suggesting additional physiological triggers. This study evaluates the relative contribution of hemoglobin versus re-acclimatization failure and other factors to thrombotic risk at high altitude.

Methods: A retrospective case-control analysis was conducted among personnel deployed between 4,500–20,000 ft (mean 13,894 ft) in the Leh-Ladakh sector. Fifty-one individuals with objectively confirmed thrombotic events (17 arterial, 34 venous) were compared with altitude-matched controls. Demographic, environmental, and hematological parameters—including hemoglobin, platelets, WBC, and D-dimer—were analyzed using t-tests and correlation coefficients.

Results: Mean age was 33.9 ± 6.9 years; BMI 23.5 ± 2.4 kg/m^2. The average duration of exposure prior to thrombosis was 11.6 months. Mean hemoglobin was 17.1 ± 2.0 g/dL in cases, with no significant difference between arterial and venous subgroups ($p > 0.4$). No correlation was noted between altitude, duration of stay, or hematological indices. Strikingly, >70% of cases occurred in returnees after leave, implicating re-acclimatization failure as a major precipitating factor. Platelet counts, WBC, and D-dimer levels remained within adaptive limits and were not independent predictors.

Conclusion: Elevated hemoglobin, while ubiquitous at high altitude, is neither necessary nor sufficient to cause thrombosis. The observed clustering among returnees highlights dynamic endothelial stress and incomplete re-acclimatization as key mechanisms. Preventive strategies should prioritize structured re-induction, hydration, and monitoring during redeployment rather than hemoglobin thresholds alone.

Keywords: Erythrocytosis, High altitude, Hypoxia, Indian armed forces, Reacclimatization, Thrombosis.

Skin Prick Test Sensitization Patterns in Adults with Allergic Bronchial Asthma and Allergic Rhinitis

Nusrat Sayed, Harsha NS2, Sowmya Nagarajan, Suraj BM
Bhagwan Mahaveer Jain Hospital

Objective: To demonstrate the allergic sensitization pattern in adults presenting with allergy symptoms (allergic rhinitis and allergic bronchial asthma) at a Hospital in Bengaluru, observed through skin prick test.

Methods: Data on sensitization, clinical history, physical examination, and diagnosis of individuals who presented to our hospital with allergic symptoms (allergic rhinitis and allergic bronchial asthma), and underwent skin prick test, was analyzed retrospectively, to establish sensitization pattern, its correlation to clinical presentation and variation in adult population.

Results: 110 adults underwent Skin Prick Test for their allergy workup from April to September 2025. Allergic rhinitis was the most common among subjects (60.86%).

Aeroallergen sensitization was seen in 78.26% of subjects. Sensitization to house dust mites (Blomia tropicalis—30.43%, Dermatophagoides pteronyssinus and farina—57.14% and 47.83%), and Cockroach—28.27%. Pollens (Parthenium hysterophorus—31.27%), and molds (Alternaria alternata—30.27%, Aspergillus fumigatus—15.07%). Differences were noted in pattern of sensitization for these allergens in the allergic rhinitis, asthma, and the 'rhinitis with asthma' groups.

Conclusions: Although differences were noted in the sensitization patterns in adult population and different allergy phenotypes, our cohort was sensitized to common airway allergens. Through skin prick testing, Clinicians can identify the various sensitization patterns to common allergens and differences within given population, thus providing knowledge on the same. Thus, enabling clinicians to provide patient-centric diagnosis and improve cost-effectiveness of treatment by allergy avoidance advice and appropriate targeting of medication (pharmacotherapy and immunotherapy).

Nephrology

Case Series of Emphysematous Infections of the Kidney and Urinary Tract: A Study from a Tertiary Care Centre

S Parmar, V Behera, N Agrawal, HBS Chaudhury, M Matta

INHS, Kalyanl, West Bengal, India

Background: Emphysematous pyelonephritis (EPN) is a severe and life-threatening infection of the renal parenchyma, collecting system or peri-nephric tissue, which is characterized by the presence of gas in the parenchymal tissue. The outcome of this condition has significantly improved over the years due to early diagnosis by better imaging modalities and a change in treatment strategies from nephrectomy to a more conservative nephron-sparing approach. We present a clinico-radio-pathological profile of a series of patients with EPN in which the patients were aggressively managed and early percutaneous surgical drainage (PCD) was performed.

Methodology: A total of 04 cases were included over a two-year period. All patients had pre-existing diabetes, among whom two patients (50%) had uncontrolled hyperglycemia at presentation and one patient had diabetic ketoacidosis; the mean blood sugar of the patients at presentation was 270 mg/dL. The mean age of the study patients was 60.33 years (range 51 - 69 years) and there were an equal number of females and males.

Discussion: Fever was seen in all patients, features of urinary infection (dysuria, pyuria) in 03(75%) and flank pain was seen in all patients (100%). Leuko-cytosis was seen in all patients (100%) (mean TLC 16,700/mm) and elevated serum creatinine was seen in all patients (100%). All 4 patients had pyelonephritis, one (25%) had both cystitis with pyelonephritis. The left urinary tract was more commonly involved (75%) than the right side (25%), and one patient had bilateral involvement. Urine culture was positive in three cases with growth of Klebsiella in two and Pseudomonas in one patient. The poor prognostic markers included presence of bilateral disease, thrombocytopenia, hypotension and elevated creatinine. Empirical intravenous antibiotics were administered to all patients as per our protocol and, subsequently, the antibiotics were changed based on the culture sensitivity. Of the 04 patients studied, 02 patients underwent PCD within 24 h. All patients responded well and recovered completely.

Conclusion: EPN is a potentially life-threatening condition commonly associated with diabetes and immunosuppressed states. Aggressive and prompt medical therapy with early PCD therapy is the key to reducing morbidity and mortality.

Keywords: Emphysematous pyelonephritis, Type 2 diabetes mellitus, Percutaneous drainage

Evaluation of the Relationship of NLR to Different Stages of Chronic Kidney Disease: A Retrospective Study

Tithi Ghosh, Soumyadeep Ghosh, Subrata Bhowmik

Department of General Medicine, Agartala Government Medical College and Govind Ballabh Pant Hospital, Agartala, Tripura, India; Division of Pharmaceutical and Fine Chemical Technology, Department of Chemical Technology, University of Calcutta, Kolkata, West Bengal, India

Background: Chronic kidney disease (CKD), a long-term metabolic disorder, causes renal damage, high rates of mortality and morbidity, and imposes a tremendous financial burden. Both local intrarenal inflammation and systemic inflammation are known to exacerbate this irreversible disease. The main objective of this study was to gain insight into the significance of the neutrophil-to-lymphocyte ratio (NLR) in CKD.

Methods: A retrospective cross-sectional research study including 65 participants with CKD, encompassing five stages of CKD in accordance with KDIGO guidelines, was undertaken in the Department of Medicine at AGMC, Tripura. From January to June 2025, information was collected. The study included patients with chronic kidney disease; patients with heart and liver diseases, children, pregnant women, those who have had a recent diagnosis of infection or feverish illness, and those receiving dialysis were not included. The differential count of hematological data was used to calculate the NLR.

Results: The particular derived inflammatory index metric NLR rose considerably among research participants (mean age: 51.092) in stage 5 of CKD. The group with the highest NLR showed lower eGFR and higher serum creatinine. Results indicated that NLR was positively correlated with CKD stages. The mean eGFR was 26.892 ± 3.23 ml/min/1.73 m^2, with 6.135% in stage 1 - 2, 18.461% in stage 3a, 29.23% in stage 3b, 35.384% in stage 4, and 10.769% in stage 5 of CKD. Concerning the exposure factors, 84.615 ± 0.52% exhibited a higher NLR (above 3.5).

Conclusion: The complex link between NLR and CKD phases illuminates renal impairment development. The NLR increases with CKD severity. These findings emphasize both the potential of NLR as a biomarker for CKD development and the necessity for additional research into its therapeutic implications in controlling this prevalent illness.

Keywords: Kidney failure, Chronic kidney disease, Neutrophil/Lymphocyte ratio, Estimated glomerular filtration rate.

Spectrum of Biopsy Proven Glomerulonephritis in Individuals with Asymptomatic Urinary Abnormalities

Behera Vineet, Rakesh Yadav, Chauhan P, Shanmugraj G, Alok Sharma, Ananthakrishnan R

Institute of Naval Medicine—INHS Asvini, Mumbai, Maharashtra, India; [2]Institute of Naval Medicine—INHS Asvini, Mumbai, Maharashtra, India

Background: Asymptomatic urinary abnormalities like hematuria and subnephrotic proteinuria are frequently incidentally detected in asymptomatic individuals without any renal disease. Most of these are benign, while a few may actually have an underlying glomerulonephritis at an early stage. Early diagnosis may help in early initiation of management, prediction of prognosis, close monitoring of disease, and thus help in retarding the progression of the disease.

Methods: The study was a retrospective observational study in a tertiary care hospital. All asymptomatic apparently healthy individuals without any known renal or related disease, individuals doing health checkups, individuals doing preanesthetic checkups, and individuals with nonrenal diseases were included in the study if they had abnormal urine examination (protein 1+ or more, any RBC or RBC cast, any active urine sediment) on two or more occasions. Individuals with systemic diseases known to affect the kidneys, like long-standing diabetes or hypertension, autoimmune conditions, or vasculitis, were excluded. A detailed history and examination were done for these patients. All patients underwent an ultrasound KUB, 24-hour urine protein, renal function tests and other relevant investigations. Individuals with glomerular or unexplained hematuria or proteinuria > 1000mg/day underwent a kidney biopsy.

Results: We screened 1000 patients, of which 108 patients had asymptomatic urinary abnormalities; of which 28 were excluded and 80 were included in the study. Of the 80 patients 42 (52.5%) patients had proteinuria > 1000 mg/day, 15 (18.7%) patients had isolated hematuria, while 23 (28.75%) patients had both hematuria and proteinuria. (80 = 42 + 15 + 23) *Of the 65 (42 + 23) subjects with proteinuria, 22 (33.8%) had 2000 - 3500mg/day, 3 (4.6%) had > 3500 mg/day, and* 28 (35%) subjects had associated abnormal creatinine.

Sixteen (20%) patients had one or both shrunken kidneys, suggestive of chronic kidney disease, while 02 patients had ADPKD and 02 had SOL kidneys each. (80 - 16 - 02 - 02 = 60)

Renal biopsy was done in 52 subjects (08 subjects refused, 60 - 08 = 52). Biopsy showed IgA nephropathy in 16 subjects (30.7%), focal segmental glomerulosclerosis in 9 subjects (17.3%), membranous nephropathy in 3 (5.7%), chronic glomerulonephritis (sclerosed glomeruli) in 8 (15.3%), hypertensive nephropathy in 3 (5.7%), minimal change disease in 4 (5.6%), chronic tubule interstitial disease in 7 (13.4%), MGRS in 1 (1.9%) and C3 glomerulopathy in 1 (1.9%).

Most patients with glomerulonephritis with proteinuria were managed with ACEI/ARBs, while steroids/immunosuppression were used in 6 patients (4 IgA nephropathy, one each of membranous nephropathy and MGRS).

Conclusion: Urinary abnormalities in asymptomatic individuals are an important screening method for early detection of glomerulonephritis and if present they should be evaluated in detail and renal biopsy done if required.

Vitamin B12 and Vitamin D3 as Biomarkers of Disease Severity in Chronic Kidney Disease

Siddheswar Debbarma, Pradip Bhaumik, Kushal Debbarma

Agartala Government Medical College & GBP Hospital, Agartala, Tripura, India

Introduction: Chronic kidney disease (CKD) is a well-recognized immunocompromised state associated with complex metabolic alterations. Notably, patients with CKD often demonstrate paradoxically elevated serum vitamin B12 and profound vitamin D3 deficiency. These changes may reflect disease severity and carry prognostic significance. This study aimed to evaluate the association of serum vitamin B12 and D3 levels with different stages of CKD and long-term prognosis.

Methods: A six-month observational, longitudinal study was conducted on 50 diagnosed CKD patients and 50 age and sex-matched healthy controls. Serum vitamin B12 and D3 concentrations were measured, and data were analyzed using descriptive statistics.

Results: CKD patients (mean age 54.89 ± 15.01 years; predominantly male) demonstrated significantly higher mean serum vitamin B12 levels (1059.24 ± 605.09 pg/mL) compared with controls (498.72 ± 178.95 pg/mL). Subgroup analysis revealed that advanced stages of CKD (stage 5 on hemodialysis: 1184.89 ± 771.08 pg/mL; stage 5 non-dialysis: 1460.5 ± 270.17 pg/mL) had markedly higher B12 levels than earlier stages (stage 3B: 433.33 ± 152.75 pg/mL; stage 4: 631.33 ± 152.11 pg/mL). In contrast, serum vitamin D3 levels were significantly reduced in CKD patients (21.43 ± 12.62 ng/mL) compared with healthy controls (76.05 ± 12.79 ng/mL).

Conclusion: Elevated serum vitamin B12 levels in CKD likely result from chronic inflammation

and impaired cellular uptake rather than true sufficiency, underscoring its potential role as a biomarker of disease severity. Profound vitamin D3 deficiency was consistently observed, highlighting the importance of regular monitoring and supplementation. Together, altered vitamin B12 and D3 profiles may serve as valuable adjunctive markers for assessing CKD progression and guiding long-term management strategies.

Beyond Gout—Magnitude and Multisystem Impact of Hyperuricemia: Insights from Telangana

Yerranagari Rajashekar, Vishakha Jain, Anitha S, Abhishek Jagdishchander Arora, Sangeetha Sampath
AIIMS, Bibinagar

Introduction: Hyperuricemia, defined as elevated serum uric acid (>7 mg/dL in males and >6.5 mg/dL in females), is a prevalent metabolic disorder linked to cardiovascular, renal, and hepatic dysfunction. While asymptomatic hyperuricemia is often overlooked, symptomatic forms denote greater metabolic burden and target organ involvement. This study assessed the magnitude and clinical–biochemical correlates of symptomatic and asymptomatic hyperuricemia among adults attending a tertiary care hospital.

Methods: A hospital-based analytical cross-sectional study was conducted among 268 adults with elevated uric acid from 4,685 screened outpatients. Participants were categorized as symptomatic (n = 77, 28.7%) or asymptomatic (n = 191, 71.3%) based on arthralgia or gouty symptoms. Clinical, anthropometric, and biochemical evaluations included renal and liver function tests, lipid profile, HbA1c, FIB-4, LVMI, and CIMT. Data were analyzed using mean ± SD and n (%), with p <0.05 considered significant.

Results: The prevalence of hyperuricemia was 5.72%. Symptomatic patients were older (52.4 ± 13.2 vs 48.4 ± 13.2 years, p = 0.02), predominantly male (p = 0.02), and had higher uric acid (8.46 ± 1.47 vs 7.99 ± 1.10 mg/dL, p = 0.005). LVMI abnormalities (p = 0.04), FIB-4 elevation (p = 0.04), and MASLD (p = 0.04) were more frequent, reflecting greater cardiac and hepatic stress. Renal stones were also higher (p = 0.12).

Conclusion: In this tertiary care cohort, 28.7% of hyperuricemic patients were symptomatic, representing a significant burden of clinically active disease. Symptomatic hyperuricemia correlated with higher uric acid, cardiac hypertrophy, hepatic fibrosis, and renal stones, underscoring its multisystem impact. Early detection and management are vital to mitigate long-term cardiovascular and renal risks.

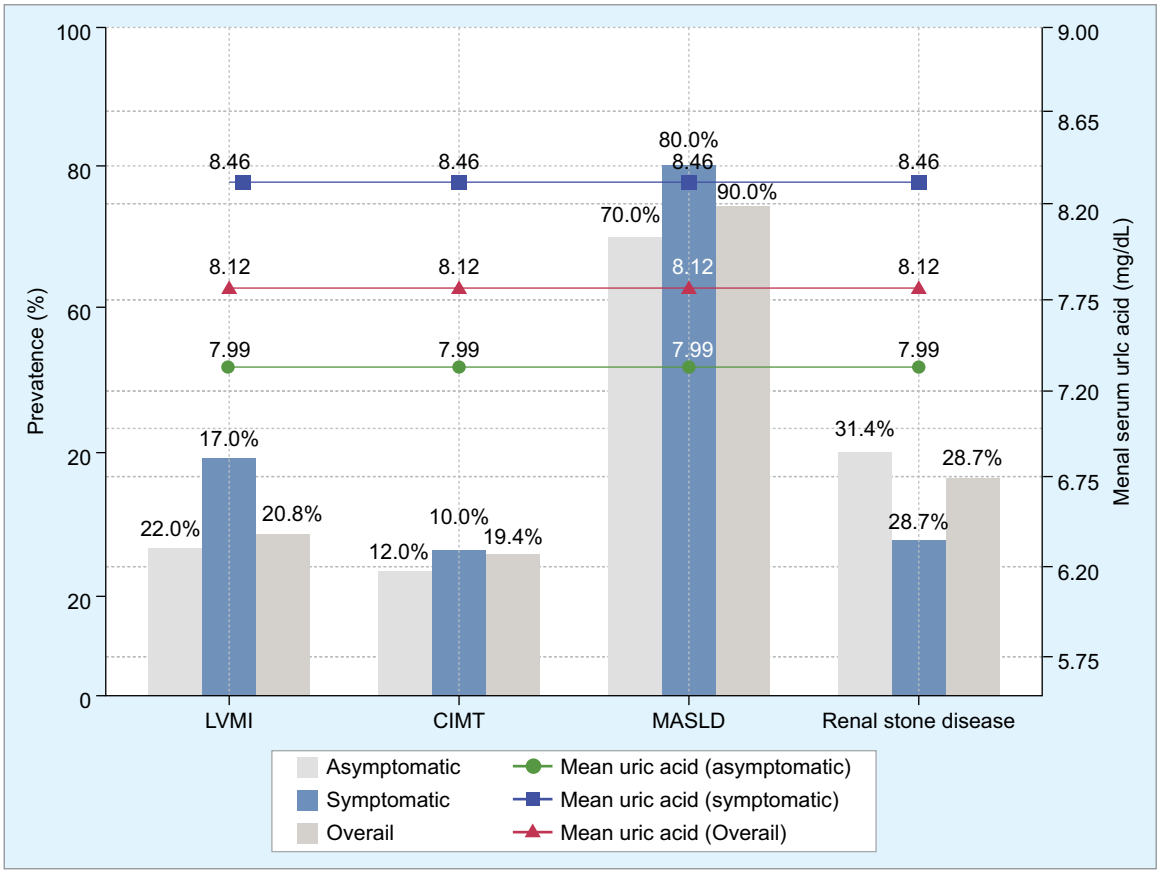
Beyond Gout: Magnitude and multisystem impact of hyperuricemia- Insights from Telangana

Vishakha Jain, Anitha S, Abhishek Jagdishchander Arora
AIIMS, Bibinagar

Methods: A hospital-based analytical cross-sectional study was conducted among 268 adults identified with elevated serum uric acid from 4,685 screened outpatients. Participants were categorized as symptomatic hyperuricemia (n =77, 28.7%) and asymptomatic hyperuricemia (n =191, 71.3%) based on arthralgia or gouty symptoms. Clinical, anthropometric, and laboratory assessments included renal and liver function tests, lipid profile, HbA1c, Fibrosis-4 Index (FIB-4), Left Ventricular Mass Index (LVMI), and carotid intima-medial thickness (CIMT). Statistical analysis used Mean ± SD and n (%), with p <0.05 considered significant.

Results: The prevalence of hyperuricemia among screened outpatients was 5.72%. Of 268 patients, 28.7% were symptomatic. Symptomatic patients were older (52.4 ± 13.2 vs. 48.4 ± 13.2 years, p = 0.02) and predominantly male (p = 0.02). Serum uric acid levels were higher in symptomatic patients (8.46 ± 1.47 vs. 7.99 ± 1.10 mg/dL, p = 0.005). LVMI abnormalities (p = 0.04) and FIB-4 scores (p = 0.04) were more frequent in symptomatic individuals, indicating greater cardiac and hepatic involvement. Renal stone disease was also more prevalent (p = 0.12).

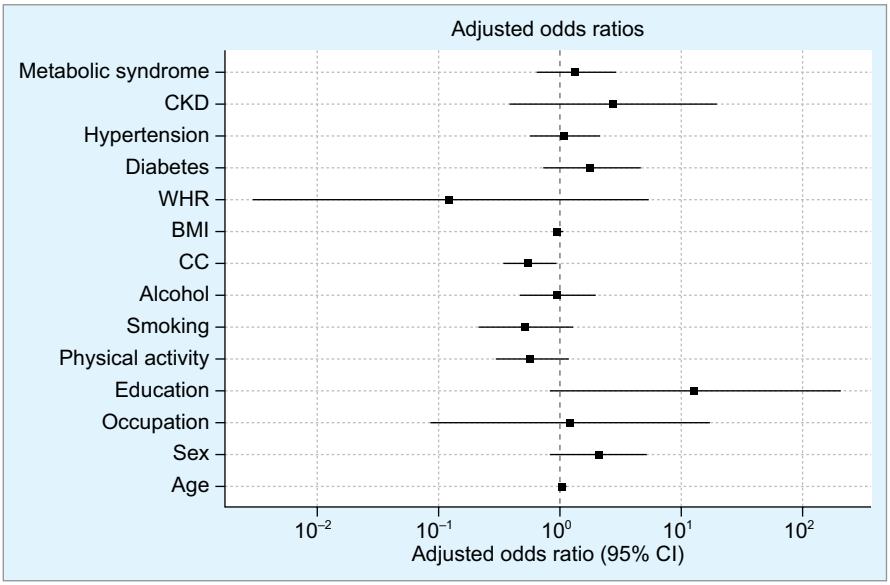
Conclusion: In this tertiary care cohort, 28.7% of hyperuricemic patients were symptomatic, reflecting a substantial burden of clinically active disease. Symptomatic hyperuricemia correlated with higher uric acid levels, cardiac hypertrophy, hepatic fibrosis, and renal stones, indicating multi-organ involvement. Early identification and management of such patients are crucial to prevent long-term cardiovascular and renal complications.



Graph. 1: Comparison of target end-organ damage in symptomatic and asymptomatic hyperuricemic patients

Table: Comparison of asymptomatic and symptomatic hyperuricemic patients

Parameters	*Asymptomatic (n = 191, 71.3%)*	*Symptomatic (n = 77, 28.7%)*	*p-value*
Mean age (years)	48.4 ± 13.2	52.4 ± 13.2	0.02*
Male (%)	71%	84%	0.02*
Education—low level (%)	30%	45%	0.04*
BMI (kg/m^2)	26.5 ± 4.8	27.6 ± 4.1	0.08
Current smokers (%)	7%	13%	0.07
Alcohol consumers (%)	42%	54%	0.16
Physical inactivity (%)	13%	19%	0.13
HbA1c (≥6.5%)	30%	33%	0.87
Hypertension (%)	39%	46%	0.06
CKD (%)	2%	3%	0.56
Serum uric acid (mg/dL)	7.99 ± 1.10	8.46 ± 1.47	0.005*
LVMI abnormal (%)	47%	61%	0.04*
Carotid intima-medial thickness (mm)	0.05 ± 0.01	0.06 ± 0.02	0.11
Fibrosis 4 index—high (%)	1%	4%	0.04*
MASLD (%)	70%	75%	0.04*
Renal stone disease (%)	22%	28%	0.12
Urine PCR (%)	5%	8%	0.09
Total (*n* = 268)			



Graph. 2: Forrest plot

Clinico-biochemical Assessment of Patients with Acute Renal Failure with Special Reference to Etiology and Short-term Outcomes in a Tertiary Care Hospital

Mandira Mondal, S Biswas, D Chakrabarti, S Adhikary
North Bengal Medical College, Darjeeling, West Bengal, India

Introduction: Acute Kidney Injury (AKI) is a frequent and serious complication among hospitalized patients, contributing substantially to morbidity and mortality. Its diverse etiologies and variable outcomes necessitate region-specific evaluation to guide preventive and therapeutic strategies. We conducted an observational study to assess the clinico-biochemical profile, etiological spectrum, and short-term outcomes of patients with AKI admitted to our institution.
Methodology: This observational, descriptive, cross-sectional study included 105 adults and adolescents with AKI (as per 2012 KDIGO criteria) and was conducted for one year duration. Clinical, biochemical, and radiological data were analyzed using descriptive and inferential statistics (SPSS v22).
Results: The mean age of participants was 53.6 ± 16.3 years; gender distribution was nearly equal (M: F = 0.98:1). Common comorbidities included hypertension and diabetes. Major etiologies were urosepsis (18%), pneumonia (17.1%), chronic liver disease with hepatorenal syndrome (15.2%), and poisoning (10.4%). 60% required renal replacement therapy (RRT), 26.6% required mechanical ventilation, and 35.2% required vasopressors. The overall mortality rate was 36.2%, significantly associated with prolonged hospital (>10 days) and HCCU (>6 days) stays ($p < 0.001$). Poor Glasgow Coma Scale scores and hypotension were key predictors of adverse outcomes. Early diagnosis and timely RRT initiation were linked to improved survival.
Conclusion: Sepsis and volume depletion remain leading causes of AKI in this region, with paraquat poisoning emerging as a distinct local contributor. Mortality remains high, emphasizing the need for early recognition, prompt intervention, and improved critical care support.

Decoding the Biochemical Signature of Snake Bite–induced Acute Kidney Injury: Insights from a Tertiary Care Study

Baishali Banerjee, Pinaki Mukhopadhyay, Dhirendra Tejpratap Singh, Roshnara Mishra
Nilratan Sircar College and Hospital, Kolkata, West Bengal, India

Introduction: This study aimed to evaluate the relationship between biochemical parameters and development of acute kidney injury following vasculotoxic snakebite and to assess their impact on clinical outcomes in a tertiary care hospital.
Materials and methods: This was descriptive, prospective, longitudinal cohort study including 135 patients admitted to the Department of General Medicine, NRSMCH, Kolkata, between Sept'23 to Aug'24. Statistical analyses, including univariate and multivariate methods, were performed using Excel and Python to evaluate the association between biochemical parameters and AKI.
Result: Among 135 patients, 55.55% were male, and 81.48% were aged 18–60 years. The mean bite-to-needle time was 1.84 hours, with a mean Anti Snake Venom (18.62 vials). AKI developed in 57.03% of patients, among them 18.48% patient needed dialysis. Other biochemical abnormalities included elevated potassium (29.62%), bilirubin (85%), SGOT (66.17%), CPK (61.02%), LDH (27.20%) and uric acid (61.02%) as well as low sodium (53.33%), albumin (61.02%) and cholesterol (54.92%). Mean hospital stay was 9.12 days, with 5.21% mortality rate. The correlation analysis demonstrated that hospital stay showed strong positive correlation with serum creatinine, moderate positive correlation with urea, potassium, bilirubin, albumin, CPK levels, and weak positive correlation with LDH and uric acid. ROC analysis with AKI revealed excellent positive AUC for LDH, bilirubin, SGOT, and CPK, good positive AUC for potassium, and excellent negative AUC for sodium, and albumin. After 3 months of discharge, 17.94% of patients exhibited persistent abnormal renal function.

Conclusion: In this study, elevated levels of CPK, bilirubin, LDH, and potassium, along with hyponatremia and hypoalbuminemia, were significant predictors of AKI following vasculotoxic snakebite. Early identification of biochemical derangement may enable prompt diagnosis, risk stratification, and improve renal outcome.

Neurology

Diagnostic Utility of Cerebrospinal Fluid Lactate in Differentiating Bacterial and Nonbacterial Acute Febrile Encephalopathy

T Garg, Z Siddiqi, S Singh
Era's Medical College and Hospital, Lucknow, Uttar Pradesh, India

Background: Acute febrile encephalopathy (AFE) is a clinical condition characterized by fever and altered mental status lasting more than 12 hours. Differentiating between bacterial and non-bacterial causes of meningoencephalitis is crucial for appropriate management. While cerebrospinal fluid (CSF) analysis using conventional markers such as glucose and protein levels plays a key role in diagnosing meningoencephalitis, CSF lactate has emerged as a potential biomarker for early differentiation of bacterial from non-bacterial infections.
Methods: This cross-sectional study was conducted over 24 months at Era's Lucknow Medical College and Hospital, including patients over 18 years presenting with AFE. After obtaining written consent, CSF samples were analyzed for biochemical, cytological, and microbiological markers. CSF lactate levels were estimated using ELISA. Hematological and biochemical parameters were compared between bacterial and non-bacterial AFE cases. Receiver operating characteristic (ROC) curves were generated to assess the diagnostic utility of CSF lactate for bacterial meningoencephalitis.
Results: A total of 100 cases were included, with 47% diagnosed with viral meningitis, 46% with tubercular meningitis, and 7% with pyogenic meningitis. Bacterial AFE cases had significantly higher total leukocyte counts (TLC) (11988.68 ± 7052.70) compared to non-bacterial AFE cases (9452.17 ± 4583.97) (p = 0.040). CSF lactate levels were significantly elevated in bacterial AFE cases (47.55 ± 27.34) compared to non-bacterial AFE cases (31.48 ± 14.71) (p = 0.001). The ROC analysis showed that CSF lactate levels above 43.42 mmol/L differentiated bacterial AFE from non-bacterial AFE, with a sensitivity of 47.2% and a specificity of 89.4% (AUROC = 0.694).
Conclusion: CSF lactate is a useful diagnostic marker for distinguishing bacterial from non-bacterial meningoencephalitis, particularly due to its high specificity. However, its moderate sensitivity suggests that CSF lactate should be used in conjunction with other clinical and laboratory findings for accurate diagnosis.
Keywords: Acute febrile encephalopathy, cerebrospinal fluid, CSF lactate, bacterial meningoencephalitis, ROC analysis, diagnostic biomarker.

Stroke Clinical Outcome Prediction Using NIHSS Scale in Acute Ischemic Anterior and Posterior Circulation Stroke: A Prospective Study

MD Rashid Haider, Uma Maheswari, K Murganandam, Radha Vijayaraghavan
Southern Railway Headquarters Hospital, Chennai, Tamil Nadu, India

Background: Stroke is a leading cause of death and disability worldwide, with ischemic stroke being the most prevalent subtype. The severity of stroke at presentation is a strong determinant of prognosis. The National Institutes of Health Stroke Scale (NIHSS) is a standardized clinical tool for quantifying neurological deficits, while the Modified Rankin Scale (mRS) is widely used for evaluating functional outcomes. However, the predictive accuracy of NIHSS in differentiating outcomes between anterior circulation (AC) and posterior circulation (PC) ischemic strokes requires further evaluation.
Objective: To assess the clinical outcome prediction of acute ischemic stroke using the NIHSS scale in anterior and posterior circulation stroke patients.
Methods: This prospective observational study was conducted at Southern Railway Headquarters Hospital, Chennai, over 18 months. A total of 240 patients with acute ischemic stroke, confirmed clinically and radiologically, were included. NIHSS scores were calculated at admission to determine initial stroke severity. Patients were followed up at one month, and outcomes were assessed using the mRS. Statistical analysis was performed using SPSS version 25. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of NIHSS for outcome prediction were calculated, with $p < 0.05$ considered statistically significant.
Results: The mean age of patients was 67.0 ± 8.7 years, with male predominance (62.1%). Hypertension (80%), diabetes mellitus (72.1%), and dyslipidemia (47.9%) were common comorbidities. Anterior circulation stroke was more common (70.8%) than posterior circulation stroke (29.2%). The mean NIHSS score was significantly higher in AC stroke (15.6 ± 9.4) compared to PC stroke (11.8 ± 6.9; p = 0.003). At one month, favorable outcome (mRS ≤3) was observed in 48.2% of AC stroke patients and 27.1% of PC stroke patients (p = 0.004). NIHSS demonstrated high sensitivity (96.0%) and NPV (95.6%) but moderate specificity (63.3%) for predicting poor outcomes.
Conclusion: NIHSS is a reliable tool for predicting clinical outcomes in acute ischemic stroke, with higher scores correlating with greater severity and poorer prognosis. Anterior circulation strokes were more prevalent and showed better functional recovery compared to posterior circulation strokes, even though PC strokes presented with relatively lower NIHSS scores. This highlights the need for careful clinical interpretation of NIHSS in posterior circulation stroke patients, where functional outcomes may be worse despite lower baseline scores.
Keywords: Ischemic stroke, NIHSS, Anterior circulation, Posterior circulation, Prognosis, Modified Rankin Scale

Socio-demographic and Clinico-anatomic Characteristics of Neurodegenerative Disorders in Sub-himalayan West Bengal: An Observational Study

V Londhe, D Saha, D Bandyopadhyay, A Adhikary
Junior Resident, Department of General Medicine, North Bengal Medical College, Darjeeling, West Bengal, India; Professor, Department of General Medicine, North Bengal Medical College, Darjeeling, West Bengal, India; Assistant Professor, Department of General Medicine, North Bengal Medical College, Darjeeling, West Bengal, India; [4]Department of General Medicine, North Bengal Medical College, Darjeeling, West Bengal, India

Introduction: Neurodegenerative disorders (NDDs) represent a growing global health burden due to aging populations. Limited data exist on their socio-demographic and clinico-anatomic features in resource-constrained settings. This study aims to delineate patterns of presentation, risk factors, and outcomes in a resource-restricted setting of sub-Himalayan West Bengal.
Methodology: A prospective, observational, hospital-based study was conducted from July 2023 to December 2024. Sixty patients aged ≥60 years, diagnosed with NDDs based on standard clinical and imaging criteria, were enrolled. Data on sociodemographic variables, lifestyle factors, co-morbidities, clinical features, biochemical markers, and neuroimaging findings were collected using a pre-designed case record form. Statistical analysis was performed by Jamovi 2.5.1.
Results: The mean age of the study population was 69.3 years, with 53.3% aged between 60–69 years, with females predominating (58.3%). Smoking (28.3%) and alcohol use (10%) were notable lifestyle risks. Memory impairment was present in 48.3%, bradykinesia in 73.3%, tremor in 70%, and gait disturbances in 65%. Depression affected 73.3%. Imaging revealed diffuse cortical atrophy in 91.7% and cerebellar atrophy in 48.3%. After 6 months, 31.7% showed disease progression despite standard medical and rehabilitative care.
Conclusion: Neurodegenerative disorders in this cohort predominantly affected elderly females with limited education, highlighting socio-demographic vulnerabilities. Clinical features correlated strongly with widespread cortical and subcortical atrophy, while vascular risk factors contributed to disease burden. Early diagnosis, lifestyle modification, cognitive stimulation, and integrated care are essential to improve quality of life in resource-limited settings.

Etiology, Clinical Characteristics, and Predictors of Outcome in Adults with Acute Meningitis and Meningoencephalitis

Sai Sirisha Nallani Chakravarthi, Sangram Mangudkar, Vijayashree Gokhale
Department of General Medicine, Dr DY Patil Medical College, Hospital and Research Centre, Pune, Maharashtra, India

Background: Acute meningitis and meningoencephalitis are associated with significant morbidity and mortality and early identification and management is vital for a favorable outcome.
Aim: To assess the Etiology, clinical profile of adult patients with acute meningitis and meningoencephalitis and determine the predictors of outcome based on the Glasgow Outcome Scale (GOS).
Results: The study cohort comprised 83 adults, aged >18 years, with 48(57.8%) men; 46(55.4%) had an immunosuppressed state. The clinical features included encephalopathy at presentation in 49(59%), seizures and focal neurological deficits in 29(31%)each. Among 47(56.6%) patients with pyogenic meningitis, an organism was identified in 20 (streptococcus pneumonia was the commonest in 12), while 7 had CSF suggestive of acute pyogenic meningitis with no organism detected; 15 patients had tuberculous meningitis, while five patients had fungal meningitis. Among 36 patients with viral encephalitis, dengue was the commonest in 8, followed by HSV and chikungunya viral encephalitis. Imaging was abnormal in 46 (55.4%). The mortality was 11%(9) and 66(79.5%) had good GOS outcome. On univariate analysis, age more than 60 years, association with retroviral infection, need for mechanical ventilation and prolonged hospital stay were associated with poor GOS outcome. Viral encephalitis was associated with favorable outcome. On Multivariate analysis retroviral infection need for mechanical ventilation

and pronged hospital stay were associated with poor GOS outcome. Need for mechanical ventilation was the strongest predictor of mortality.
Conclusion: Streptococcus pneumoniae was the commonest cause of acute meningitis, while dengue was the common viral encephalitis in the present cohort. Retroviral infection, need for mechanical ventilation and prolonged hospital stay were associated with mortality and poor GOS outcome. Need for mechanical ventilation was the strongest predictor of mortality.

A Study on Clinical Etiological Profile and Short-term Outcome in Patients Presenting with Non-traumatic Altered Sensorium

Amavarapu Chandu Vamsi, Naval Chandra, Surya Prabha T, Y Shashidhar, Rohit Lagisetty

Junior Resident, Department of General Medicine, Nizam's Institute of Medical Sciences, Hyderabad, Telangana, India; Department of General Medicine, Nizam's Institute of Medical Sciences, Hyderabad, Telangana, India

Background: Altered sensorium is a common and critical neurological presentation encountered in emergencies and inpatient settings. It represents a spectrum of disturbances in consciousness, cognition, and awareness, often signaling serious underlying systemic, infectious, metabolic, or structural brain pathology. Timely identification of the underlying etiology remains pivotal for improving survival and preventing long-term disability.

In India, nontraumatic causes of altered sensorium contribute significantly to hospital admissions, intensive care unit utilization, and mortality. The etiological spectrum varies widely across different age groups and geographical regions. While metabolic, vascular, infectious, and toxicological causes are frequently reported, the relative burden and outcome patterns in the Indian population continue to evolve due to epidemiological shifts, increasing prevalence of lifestyle diseases, and improved diagnostic capabilities.

Despite its clinical relevance, comprehensive data on the etiological distribution and outcome predictors of non-traumatic altered sensorium from tertiary-care centres in South India remain limited. This study was undertaken at Nizam's Institute of Medical Sciences (NIMS), Hyderabad, with the aim of delineating the clinical presentation, etiological profile, and short-term outcomes of adult patients presenting with acute non-traumatic altered sensorium.

Objectives:

1. To evaluate and categorize the etiologies of non-traumatic altered sensorium in adult patients.
2. To analyze the clinical profile, including symptomatology and neurological status at presentation.
3. To assess short-term in-hospital outcomes and determine factors associated with mortality and disability.

Methodology, study design, and population: This cross-sectional study included 99 adults with non-traumatic altered sensorium at NIMS, Hyderabad, over one year. Clinical evaluation, GCS scoring, neuroimaging, and relevant laboratory investigations were performed. Patients were followed until discharge or death, and outcomes were classified as recovery without disability, recovery with disability, or death.

Results: In this study, the mean patient age was 52.66 years, with a male predominance (65.7%). Metabolic disturbances were the leading cause (33.3%), followed by vascular (22.2%), infectious (20.2%), sepsis-related (13.1%), drug/toxin-induced (5.1%), and other causes (6.1%). Headache, fever, and seizures were frequent presenting symptoms, and diabetes and hypertension were the most common comorbidities. Sepsis-associated encephalopathy had the highest mortality (46.2%), whereas vascular causes resulted in significant disability (90.9%). Metabolic and infectious etiologies demonstrated favorable outcomes, with recovery without disability in 81.8% and 95% of patients, respectively. A lower admission GCS strongly correlated with mortality (p = 0.03). Overall, 57.6% recovered without disability, while 14.1% died.

Discussion: This study highlights that metabolic disorders are the most frequent and reversible causes of non-traumatic altered sensorium in India, reflecting the high regional burden. Vascular aetiologies, mainly ischemic stroke, led to substantial disability, emphasizing the need for improved stroke care and rehabilitation. Sepsis-associated encephalopathy showed the highest mortality, reinforcing the importance of prompt sepsis management. CNS infections, especially tuberculous meningitis, demonstrated favourable outcomes with early treatment. Admission GCS remained a strong predictor of prognosis, with lower scores indicating poorer outcomes. Overall, timely etiological identification and standardized evaluation protocols are critical for improving outcomes in patients presenting with altered sensorium.

Conclusion: Non-traumatic altered sensorium in adults is most commonly attributed to metabolic, vascular, infectious, and septic etiologies. Early detection of reversible causes such as metabolic disturbances and drug intoxication can markedly improve recovery. While sepsis contributes substantially to mortality, vascular events are associated with long-term disability. The admission GCS serves as a strong predictor of short-term outcome. Overall, rapid recognition, systematic evaluation, and timely intervention in tertiary-care settings are key to reducing morbidity and mortality in these patients.

Keywords: Altered sensorium, coma, metabolic encephalopathy, cerebrovascular accident, sepsis-associated encephalopathy, meningitis, hyponatremia, GCS, short-term outcome, India.

Exploration of Clinical Characteristics and Treatment Patterns in Painful Neuropathy Among Indian Patients: A Real-world Observational Study

Nishikant Madkholkar, Kushal Sarda, Akhilesh Sharma

Medical Advisor, Alkem Laboratories, Mumbai, Maharashtra, India; General Manager, Medical Affairs, Alkem Laboratories, Mumbai, Maharashtra, India; [3]Chief Medical Officer, Alkem Laboratories, Mumbai, Maharashtra, India

Background: Painful neuropathy is a common neurological condition that significantly affects daily functioning, yet evidence from routine clinical practice in India remains limited. This study aimed to evaluate clinical characteristics, comorbidities, symptom patterns, pain severity, and detailed treatment practices in Indian patients with neuropathic pain.

Methods: A cross-sectional analysis was conducted on 4,418 patients across 295 centers in India under routine clinical care. Data collected included demographics, neuropathy type, associated conditions, sensory–motor symptoms, pain severity, and detailed patterns of neuropathic medication use.

Results: The mean age was 49.31 ± 11.26 years, with 73.83% males. Peripheral neuropathy was predominant (98.46%). Common comorbidities included diabetes (15.07%) and neuropathic disorders (11.68%). Sensory symptoms were led by numbness (49.39%) and paresthesia (42.08%), whereas motor symptoms included weakness (60.10%) and muscle atrophy (27.0%).

Treatment analysis showed a strong preference for pregabalin-based regimens. The most frequently prescribed therapy was pregabalin + methylcobalamin (48.53%). Other combinations included pregabalin + nortriptyline (3.49%), pregabalin + duloxetine (0.45%), methylcobalamin + nortriptyline + pregabalin (3.62%), and nortriptyline + pregabalin (3.01%). Monotherapy use included pregabalin (10.80%) and gabapentin (0.43%), with rare combinations such as gabapentin + nortriptyline (0.05%) and gabapentin + pregabalin (0.02%). Multinutrient formulations containing alpha-lipoic acid, benfotiamine, biotin, folic acid, pyridoxine, and methylcobalamin were used in 3.15% of patients. Pain severity was mild in 41.10%, moderate in 42.67%, and severe in 16.23% of the patients.

Conclusion: Painful neuropathy in India predominantly affects middle-aged adults, with peripheral neuropathy and diabetes being the most common comorbidities. Sensory symptoms, especially numbness and paresthesia, along with motor weakness, were frequently reported. Treatment patterns were dominated by pregabalin-based combinations, reflecting clinician preference amid a significant burden of moderate to severe pain.

Prevalence of Vitamin D Deficiency in Migraine Patients and Response to Supplementation

Gunupuru Sravani

Great Eastern Medical School and Hospital, Srikakulam, Andhra Pradesh, India

Introduction: Migraine is a common neurovascular disorder characterized by recurrent, moderate to severe headaches often accompanied by nausea, photophobia, and phonophobia. Emerging evidence suggests an association between migraine and vitamin D deficiency. Vitamin D plays key anti-inflammatory and neuromodulatory roles, influencing cytokine activity, CGRP release, neuronal excitability, and serotonin synthesis.

Methods: A cross-sectional observational study was conducted on 50 migraine patients diagnosed using IHS criteria and 50 age- and sex-matched controls at Great Eastern Medical School and Hospital. Serum vitamin D levels were measured in all participants. Headache severity was assessed using a numeric pain scale, and disability was evaluated using the MIDAS questionnaire. Vitamin D–deficient patients received oral or injectable supplementation for 4–8 weeks.

Results: A higher prevalence of vitamin D deficiency was observed among migraine patients compared with controls. Lower vitamin D levels correlated with increased headache severity and greater disability scores. Patients receiving vitamin D supplementation demonstrated clinical improvement, including reduced pain intensity and decreased migraine frequency.

Conclusion: Vitamin D deficiency is common in migraine patients and is associated with greater disease severity. Supplementation in deficient individuals leads to symptomatic improvement, suggesting that routine screening and correction of vitamin D levels may serve as a beneficial adjunct in migraine management.

Obesity and Metabolic Disorders

Association of Metabolic Syndrome Severity Score (MetSSS) with Corresponding Controlled Attenuation Parameter (CAP) Score Obtained by Fibro-elastography: A Hospital-based Cross-sectional Study

A Patel, R Joshi, Y Khan, A Singhai, A Pakhare
Junior Resident, Department of General Medicine, AIIMS Bhopal, Bhopal, Madhya Pradesh, India; Professor and Head of Department, Department of General Medicine, AIIMS Bhopal, Bhopal, Madhya Pradesh, India; [3–5]Associate Professor, Department of General Medicine, AIIMS Bhopal, Bhopal, Madhya Pradesh, India

Introduction: Metabolic Syndrome (MetS) comprises central obesity, hypertension, hyperglycemia, hypertriglyceridemia, and low HDL-C, driven by insulin resistance and visceral adiposity. It affects 20–25% globally and ~25% in India, higher in women. Visceral fat also contributes to MASLD, with a global prevalence of ~25%. Vibration-controlled transient elastography (CAP score) aids non-invasive detection of MASLD. Management includes lifestyle modification—weight loss, diet, exercise, stress control, and sleep. Indices like CAP and MetSSS assist in grading of severity of MAFLD and MetS respectively.

Objectives: To screen patients attending the outpatient department for metabolic syndrome and to categorize them into groups A, B, and C.

To estimate MetSSS and obtain the CAP score by Fibro-elastography

To assess the association between MetSSS and the CAP score.

Methodology: *Study Setting:* Medicine OPD, AIIMS Bhopal

Study Design: Hospital based Cross-sectional study

Sample Size: 144

Study Participants – Inclusion Criteria:

Age: 18–65 years

MetS diagnosis as per NCEP ATP III (2005) criteria

Exclusion Criteria: History of other possible causes known to cause steatohepatitis

Study Procedures: Participants have undergone a structured questionnaire covering demographics and clinical history, along with anthropometric measurements (BMI, waist circumference, BP). Biochemical reports and FibroScan results were used to calculate MetSSS and CAP scores.

MetSSS Estimation: MetSSS was calculated using an online tool, using parameters for non-Hispanic Black populations due to the lack of South Asian-specific correction factors.

Results: The study included 144 participants with metabolic syndrome, grouped as A (diabetes <1 year), B (>1 year), and C (with complications). Mean age and male predominance increased across groups, while BMI and waist circumference declined. Median MetSSS (BMI and WC-based) rose progressively from A to C, indicating increasing metabolic severity. CAP scores decreased (268 → 242.5 dB/m), suggesting reduced hepatic steatosis, while LSM values (≈5.2–5.35 kPa) indicated minimal fibrosis. MetSSS showed significant positive correlations with CAP in Groups B and C, strongest for WC-percentile scores (r = 0.57, R^2 = 0.33), reflecting a tighter linkage with disease progression

Conclusion: The severity of metabolic syndrome, as reflected by MetSSS, showed a modest but consistent positive correlation with hepatic fat content (CAP), more pronounced in subjects with longer diabetes duration and those with established complications.

Metabolically Healthy Obese—A Cat on the Wall: Redefining Stability and Risk in Obesity Phenotypes

K Joseph Rajan
Rajans Hospital Pvt Ltd.

Metabolically healthy obesity (MHO) denotes a subgroup of individuals with elevated adiposity yet preserved insulin sensitivity, absence of overt metabolic syndrome components, and comparatively lower cardiometabolic risk than metabolically unhealthy obesity (MUO). The prevalence of MHO varies markedly across studies and definitions; globally, it ranges from 10–30% of adults with obesity, while in Asian Indian populations estimates vary from approximately 15–40%, depending on population characteristics and diagnostic criteria. Recent observational data suggest that although MHO may be increasing in prevalence, it remains a minority phenotype among individuals with obesity. *Emerging mechanistic evidence* implicates favorable adipose tissue distribution, reduced visceral and hepatic ectopic fat deposition, and attenuated inflammatory signaling in mediating metabolic resilience. *Nonetheless*, meta-analytic data indicate that MHO is often a transient state, and even individuals classified as MHO face higher long-term risks of type 2 diabetes, cardiovascular disease, and mortality compared with metabolically healthy normal-weight peers. These findings emphasize the need for clinicians to monitor metabolic health in all people with obesity and for researchers to refine definitions, identify protective mechanisms, and evaluate targeted interventions for MHO.

Effect of Obesity on Cardiovascular Parameters and Blood Glucose Level in Adolescents: An Observational Study

VS Ram, M Kumar, G Kumar, A Agarwal, S Rajput
Uttar Pradesh University of Medical Sciences, Saifai, Etawah, Uttar Pradesh, India

Introduction: Adolescent obesity has risen substantially in recent decades and is associated with early clustering of cardiometabolic risk factors. Excess adiposity contributes to hypertension, dyslipidemia, insulin resistance, inflammation, cardiac remodeling, and early atherosclerotic changes. As these abnormalities begin during adolescence and track into adulthood, early evaluation of cardiovascular and metabolic parameters is essential to prevent long-term morbidity.

Aims and objectives: To study the effects of obesity on cardiovascular parameters and blood glucose levels in adolescents.

Material and methods: This observational study was conducted over 1.5 years at the Department of General Medicine, UPUMS, Saifai, and included 110 adolescents aged 10–19 years. Anthropometric measurements were recorded and BMI was calculated; obesity was defined as BMI ≥95th percentile for age and sex. Blood pressure was measured using a calibrated mercury sphygmomanometer following standard protocols. Fasting blood glucose and HbA1c were estimated using ACCU-CHEK Performa and Bio-RAD D-10 analyzers. A resting ECG recording was performed using the BPL Cardiart 108T. Participants with chronic disease, long-term medication use, substance abuse, or acute illness were excluded. Statistical analysis assessed the association between obesity, cardiovascular parameters, and glycemic indices.

Results: Obese adolescents demonstrated significantly higher systolic and diastolic blood pressures than non-obese peers. ECG findings showed obesity-related abnormalities suggestive of early cardiac involvement. Fasting glucose and HbA1c values were also higher in obese subjects, indicating early metabolic dysregulation. BMI showed a positive correlation with adverse cardiovascular and glycemic parameters.

Conclusion: Obesity in adolescents is strongly associated with early cardiovascular and metabolic alterations. Routine screening, early lifestyle modification, and preventive interventions are crucial to reduce progression to adult cardiometabolic disease.

A Single Center Study on the Effect of Semaglutide on Lipid Profile, Waist Circumference, Inflammatory Markers, and Diabetic Profile in Poorly Controlled Type 2 Diabetes Mellitus in Coimbatore, Tamil Nadu: A Case Series

Ezhil Nilavan, Saravanan T
Postgraduate Resident, Department of General Medicine, PSG Institute of Medical Sciences and Research, Coimbatore, Tamil Nadu, India; Professor and Head of Department, Department of General Medicine, PSG Institute of Medical Sciences and Research, Coimbatore, Tamil Nadu, India

Introduction: Semaglutide, a long-acting GLP-1 receptor agonist, has demonstrated improvement in glycemic control and weight reduction in T2DM. Its metabolic benefits may extend beyond glucose lowering, including effects on dyslipidemia, central adiposity, and inflammatory pathways. These components are pivotal in cardiometabolic risk among patients with poorly controlled T2DM.

Objectives: To assess the effect of weekly semaglutide therapy on lipid profile, waist circumference, inflammatory markers (CRP, ESR), and diabetic profile (HbA1c, fasting glucose) in patients with poorly controlled T2DM despite ongoing standard therapy.

Methodology: Patient data were collected from EMR records of our institution over the period of June 2025 to August 2025. Patients with T2DM receiving semaglutide for a minimum of 12 weeks were included. Baseline parameters recorded were age, sex, BMI, waist circumference, HbA1c, fasting glucose, lipid profile (TG, LDL, HDL, total cholesterol), and inflammatory markers. Follow-up values at 12–24 weeks of therapy were compared with baseline.

Results: Patients demonstrated meaningful reductions in HbA1c and fasting glucose after initiating semaglutide. Waist circumference showed a consistent downward trend independent of BMI reduction. Lipid parameters improved, with reductions in triglycerides and LDL and modest increases in HDL. Inflammatory markers showed decline, suggesting a reduction in metabolic inflammation. Response was more pronounced in patients with baseline higher HbA1c and central obesity.

Discussion: Semaglutide demonstrates beneficial multi-system effects in poorly controlled T2DM, targeting lipids, adiposity, and inflammation alongside glycemic improvement. These findings highlight its role in comprehensive metabolic risk modification.

Conclusion: Semaglutide may serve as an effective adjunct in T2DM management where metabolic control remains suboptimal. Regular monitoring of lipid parameters and inflammatory markers may guide therapeutic optimization.

Real-world Effectiveness and Safety of Omega-3 Fatty Acids in Hypertriglyceridemia: A Multicentre Retrospective Study

Ajitkumar Gondane, Pooja Vaidya, Dattatray Pawar, Akhilesh Sharma

Medical Advisor, Alkem Laboratories, Mumbai, Maharashtra, India; Senior Medical Advisor, Alkem Laboratories, Mumbai, Maharashtra, India; General Manager, Medical Affairs, Alkem Laboratories, Mumbai, Maharashtra, India; Chief Medical Officer, Alkem Laboratories, Mumbai, Maharashtra, India

Introduction: Hypertriglyceridemia is rapidly emerging as a major lipid abnormality in India and contributes significantly to the burden of atherosclerotic cardiovascular disease (ASCVD). While global evidence supports the triglyceride-lowering benefits of Omega-3 Fatty Acids (O3FA), real-world insights into their effectiveness, safety, and utilization patterns in the Indian setting remain limited. This study aimed to generate real-world evidence on O3FA therapy in hypertriglyceridemia.
Methodology: This multicentre, retrospective observational study included patients diagnosed with hypertriglyceridemia and prescribed O3FA therapy between January 2023 and April 2024 across participating clinical centres. Demographic details, treatment duration, lipid and glycemic parameters, and safety data were extracted from medical records. All patients received one O3FA capsule daily, and pre- and post-treatment biochemical values were analyzed to assess effectiveness and safety.
Results: A total of 447 patients were included, of whom 80.3% were male, with a mean age of 49.5 years. The mean duration of O3FA therapy was 2.09 months. Significant improvements were observed across lipid parameters: triglycerides decreased by 113.42 mg/dL, total cholesterol by 75.99 mg/dL, LDL-C by 49.15 mg/dL, and VLDL by 13.99 mg/dL, while HDL-C increased by 16.47 mg/dL (all $p < 0.001$). Glycemic parameters also showed improvement, with reductions in fasting blood glucose (-24.79 mg/dL), postprandial glucose (-10.17 mg/dL), and HbA1c (-0.94%). Safety analysis reported only mild gastrointestinal disturbances in four patients, with no severe adverse events.
Conclusion: O3FA therapy demonstrated clinically meaningful improvements in both lipid and glycemic parameters, along with a favorable safety profile in Indian patients with hypertriglyceridemia. These findings strengthen the evidence supporting O3FA as an effective cardiometabolic intervention in routine clinical practice.

Age-stratified Differences in Body Fat, Muscle Mass, and Visceral Adiposity Among Indian Adults: A Bioimpedance-based Cross-sectional Study in Goa

Ankit S Nair, Chitralekha Nayak, Vijay Naik, Myla Isha Pereira

Healthway Hospitals Pvt Ltd, Old Goa, Goa, India

Introduction: BMI alone does not adequately reflect age-related changes in adiposity or muscle mass in Asian adults, who often accumulate visceral fat and lose lean tissue earlier in life. Bioelectrical impedance analysis provides more detailed information on body composition and may improve recognition of metabolic ageing. Limited data exist on age- and sex-specific body composition patterns in the Goan population, emphasizing the need for region-specific evidence. This study aimed to evaluate age-related variation in body fat percentage, visceral fat, subcutaneous fat, and muscle mass, and to analyze sex differences in these parameters.
Methods: This cross-sectional study was conducted in a tertiary-care hospital in Goa and included adults undergoing body composition assessment using the Omron Karada Scan HBF-702T. Convenience sampling was used. Statistical analysis was performed using IBM SPSS Statistics Version 24. Normality was assessed using the Shapiro-Wilk test. Sex differences in BMI, body fat, visceral fat, subcutaneous fat, and muscle mass were analyzed using the Mann-Whitney U test. Associations with age were examined using Spearman's rank correlations. Participants were grouped into four age categories: <30, 30–45, 46–60, and >60 years.
Results: Body fat percentage increased progressively with age, with women showing higher adiposity in the younger decades and men demonstrating steeper increases after mid-40s. Muscle mass showed a consistent age-related decline, with the 46–60 years group marking a clear transition into early sarcopenia, especially among men. Visceral fat rose sharply after 40 years and remained higher in men across all age categories. These changes occurred despite relatively similar BMI distributions, highlighting BMI's limited sensitivity in detecting metabolic aging.
Conclusion: Age exerts a significant influence on adiposity, visceral fat accumulation, and muscle decline-features not captured by BMI alone. Incorporating body composition analysis into routine clinical assessments may enhance early detection of high-risk metabolic profiles. As the study used a single-centre, hospital-based convenience sample, wider generalizability is limited.

Poisoning and Toxicology

Study to Assess Paradyenia Organophosphorous Poisoning Scale as a Severity and Prognostic Marker in Patients Presenting to the Emergency Department with a History of Organophosphorous Compound Consumption

Shashikantha Mallikarjuna Angadi

Raichur Institute of Medical Sciences, Raichur, Karnataka, India

Background: Organophosphate compounds (OPC) cause most self-poisoning deaths in India due to their easy availability and lack of stringent laws. The use of these products for deliberate self-harm has increased proportionately with their use in agriculture. Organophosphorus (OP) insecticides are possibly one of the commonest causes of morbidity and mortality due to poisoning worldwide.
Aim: To evaluate the prognostic value of the clinical parameters of the POP scale in predicting the severity of organophosphorous compound poisoning in terms of duration of hospital stay, mechanical ventilation, and mortality.
Methods and materials: This was a prospective observational study of 60 patients with acute organophosphorus poisoning presenting to the emergency department of Raichur Institute of Medical Sciences, Raichur. We performed the study over a one-year period from March 2024 to March 2025. All patients fulfilling the inclusion criteria were given initial treatment. We applied the POP scale to each patient at admission and graded their poisoning severity as mild, moderate, or severe. This scale assessed the patient's need for mechanical ventilation, ICU management, and their final clinical outcome.
Results: We enrolled a total of 60 patients in the study. Monocrotophos was the most commonly consumed OP compound, followed by chlorpyrifos. Most patients (47) were in the mild POP scale score range, 13 patients had moderate POP scale scores, and 3 of the patients had severe poisoning. 75% of patients (45) required ventilatory support, including 61.7% patients (29) with mild POP scale scores and 100% patients with moderate and severe scores. Among the 60 patients, 76% (46) improved, and 14 patients expired. The mortality rate was 30.8% and 100% for patients with moderate and severe poisoning, respectively. 68 % patients on ventilator support improved, and 31 % died. All patients who did not require ventilator support survived.
Conclusion: POP score at admission correlated well with the need for ventilator support, length of stay in the ICU, complications, and mortality. It can thus be used for prognostication and risk stratification of patients with OP compound poisoning.

Serum Creatinine Phosphokinase vs Pseudocholinesterase as a Prognostic Marker in Organophosphate Poisoning: A Cross-Sectional Study

M Jayraj, Raveesha A

Department of General Medicine, Sri Devaraj Urs Academy of Higher Education and Research, Kolar, Karnataka, India; [2]Professor, Head of Unit, Department of General Medicine, Sri Devaraj Urs Academy of Higher Education and Research, Kolar, Karnataka, India

Background: Organophosphate poisoning is a global health burden due to intentional and occupational exposure, particularly in Asian countries. Patients are usually monitored through serum pseudocholinesterase levels.1 Still, it is non-specific, does not correlate well with the severity of poisoning, and is not widely available in laboratory settings in developing countries. This study aims to assess serum baseline creatine phosphokinase (CPK) levels as a prognostic biomarker in acute organophosphate poisoning. In OP poisoning, intermediate syndrome (IMS) manifests between the end of the acute cholinergic crisis and delayed neuropathy.2 Respiratory paralysis in IMS, if identified early, can reduce the need for ventilator support, morbidity, and mortality. Serum creatine phosphokinase (CPK) is elevated in IMS The objectives of the study are to measure serum CPK levels, correlate CPK levels with the severity of poisoning, and estimate the atropine dose used.
Lacuna of the study: As Serum Pseudocholinesterase levels are not an effective prognostic indicator of outcome of Organophosphate poisoning. We require better prognostic markers for Organophosphate poisoning patients.
Objectives: To measure Serum creatinine, phosphokinase levels, and Pseudocholinesterase levels in organophosphate poisoning patients
To determine the better prognostic indicator in organophosphate poisoning.
Materials and methods:
Study Design: Cross-sectional study
Study period: 3 months
Sample size: 80
Sample size was estimated by using the correlation coefficient (r) of pseudocholinesterase with creatinine phosphokinase (POP scale) as 0.803 (i.e., $r = 0.803$) from the study by Ashekul Islam et al. Using these values at 95% confidence level and 90% power and substituting in the below formula, a sample size of 80 was obtained.
Total sample size = $N = [(Z_\alpha + Z_\beta)/C]^2 + 3$
The standard normal deviate for $\alpha = Z_\alpha = 1.960$
The standard normal deviate for $\beta = Z_\beta = 1.28$
r = Correlation coefficient = 0.803
$C = 0.5 \times \ln[(1 + r)/(1 - r)]$

Inclusion criteria:
1. All patients of either sex with an age of more than 18 years who will give informed consent
2. Patients with Organophosphate poisoning diagnosed by history and clinical examination.

Exclusion criteria:
1. Patients with co-existing illnesses like myopathy, chronic pancreatic diseases, chronic liver diseases, psychiatric conditions, myocardial infarction, myocarditis, and pregnant ladies were excluded

Study area: RLJH Hospital
Study Population: Patients admitted to the MICU, ICU, and ward in the RLJH hospital.
Study Method: After taking informed consent, the following steps are followed from the time of arrival
Through the assessment of history
Detailed clinical examination for signs of organophosphate poisoning
Laboratory investigations are done, including creatinine phosphokinase levels and pseudocholinesterase levels
Radiology: Chest X-ray
Compare these levels with the outcome
A blood sample is collected at the time of presentation, 4 mL of blood and is sent for basic blood parameters such as Complete Blood Picture, Renal function tests, Liver function tests, along with the above-mentioned parameters. These levels are compared with the outcome at the end of the hospital stay and analyzed.
Analysis and statistical methods: Data will be entered into Microsoft excel data sheet and will be analyzed using SPSS 22 version software. Categorical data will be represented in the form of Frequencies and proportions. Chi-square test or Fisher's exact test (for 2 × 2 tables only) will be used as a test of significance for qualitative data. Yates correction will be applied wherever chi-square rules were not fulfilled (for 2×2 tables only).
Continuous data will be represented as mean and standard deviation. An independent t-test or Mann-Whitney U test will be used as a test of significance to identify the mean difference between two quantitative variables and qualitative variables, respectively.
Graphical representation of data: MS Excel and MS Word will be used to obtain various types of graphs, such as bar diagrams, pie diagrams, and Scatter plots.
Pearson correlation or Spearman's correlation will be done to find the correlation between two quantitative variables and qualitative variables, respectively.

Correlation coefficient (r)	*Interpretation*
0–0.3	Positive weak correlation
0.3–0.6	Positive moderate correlation
0.6–1.0	Positive strong correlation
0 to (–0.3)	Negative weak correlation
(–0.3) to (–0.6)	Negative moderate correlation
(–0.6) to – (1)	Negative strong correlation

p-value (Probability that the result is true) of <0.05 will be considered as statistically significant after assuming all the rules of statistical tests.
Statistical software: MS Excel, SPSS version 22 (IBM SPSS Statistics, Somers, NY, USA) will be used to analyze data.
Reviewed in the Department – Yes
Proforma/questionnaires of the study – use check box wherever possible- ENCLOSED
Informed Consent form and project Information sheet in Kannada and English with Patient Name and Mobile Number – ENCLOSED
Contribution by each Investigator – ENCLOSED
Signature & Name of the Principal Investigator
Signature & Name of the Co-Investigators:
Signature of the Head of Department
Remarks from the Head of the Department

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A Study to Evaluate Serum Creatinine Phosphokinase and Serum Lactate Dehydrogenase as Potential Prognostic Markers in Assessing Clinical Severity in Organophosphorus Poisoning

Chittamuru Maansi Reddy
Sri Devaraj Urs Medical College, Kolar, Karnataka, India

Background: Organophosphorus (OP) poisoning remains a significant public health concern, particularly in regions where pesticides are widely used. OP compounds function as irreversible inhibitors of cholinesterase enzymes, leading to severe neurological, cardiovascular, and respiratory complications. Early identification of high-risk patients is crucial for optimizing treatment strategies and improving outcomes. This study aims to evaluate the prognostic significance of serum creatinine phosphokinase (CPK) and lactate dehydrogenase (LDH) levels in assessing the clinical severity of OP poisoning using the Peradeniya Organophosphorus Poisoning (POP) scale.
Methods: This prospective observational study was conducted over a 3-month period at RLJH Hospital, including 30 patients diagnosed with acute OP poisoning. Inclusion criteria encompassed patients aged ≥18 years, presenting with clinical symptoms of OP poisoning, and admitted to intensive care. Exclusion criteria included pre-existing neuromuscular, metabolic, or cardiovascular conditions. Blood samples were collected at admission for serum CPK and LDH estimation using an automated bioanalyzer. The severity of poisoning was classified using the POP scoring scale, and patients were categorized into mild (0–3), moderate (4–7), and severe (8–11) groups. Statistical analyses, including Pearson correlation, chi-square test, and regression models, were used to assess the relationship between biomarker levels and clinical severity.
Results: Elevated serum CPK and LDH levels showed a strong positive correlation with higher POP scores, indicating greater poisoning severity ($p < 0.05$). Patients in the severe category exhibited significantly higher CPK and LDH values than those in the mild and moderate groups. ROC curve analysis demonstrated that CPK had a higher predictive accuracy for severe OP poisoning than LDH, making it a potential early biomarker for risk stratification.
Conclusion: Serum CPK and LDH levels serve as cost-effective and accessible prognostic markers for assessing the severity of OP poisoning. Their integration into clinical evaluation may help improve early risk identification, guiding timely interventions, especially in resource-limited settings. Further studies with larger cohorts are warranted to validate these findings and establish standardized biomarker thresholds for OP poisoning management.

Keywords: Organophosphorus Poisoning, Serum Biomarkers, CPK, LDH, POP Score, Prognostic Indicators, Acute Toxicity, Risk Stratification.

A Study of Serum Creatine Phosphokinase and Amylase Levels as Surrogate Markers of Severity and Clinical Outcome in Organophosphate Poisoning

Ansh Makhija, Akashdeep Sehgal, Mahesh Dave
Junior Resident, Department of General Medicine, RNT Medical College, Udaipur, Rajasthan, India; Senior Professor, Department of General Medicine, RNT Medical College, Udaipur, Rajasthan, India

Introduction: Organophosphate (OP) poisoning remains a significant health problem in developing countries, particularly in India, where it is a common cause of morbidity and mortality. Early recognition of severity is crucial for timely intervention. Conventional markers like plasma cholinesterase are limited by cost and availability. Creatine phosphokinase (CPK) and serum amylase, reflecting muscle and pancreatic involvement, respectively, have emerged as potential surrogate markers for assessing severity and predicting outcomes in OP poisoning.
Methodology: A prospective observational study was conducted at RNT Medical College and Maharana Bhupal Government Hospital, Udaipur. A total of 100 patients with confirmed OP poisoning were enrolled after informed consent. Clinical severity was assessed using the Peradeniya Organophosphorus Poisoning (POP) scale. Serum CPK and amylase levels were measured on day 1 and day 3 of admission. Data regarding demographics, intent, occupation, clinical features, hospital stay, ventilatory requirement, and outcomes were recorded. Statistical analysis was performed to correlate enzyme levels with severity and clinical outcome.
Results: The mean age of patients was 31.8 years, with males comprising 68% of cases. Suicidal ingestion accounted for 91% of poisonings, and farmers represented the largest occupational group (43%). Based on POP scores, 55% had mild, 36% moderate, and 9% severe poisoning. Mean CPK and amylase levels showed a statistically significant rise with increasing severity ($p < 0.001$). Patients requiring ventilatory support and those with fatal outcomes demonstrated markedly elevated enzyme levels compared to survivors.
Conclusion: Serum CPK and amylase levels strongly correlate with severity and adverse outcomes in OP poisoning. These inexpensive and widely available tests, when combined with clinical scoring systems, provide valuable prognostic information. Their integration into routine assessment can aid in early risk stratification, guide therapeutic interventions, and ultimately reduce mortality in resource-limited settings.

Evaluation of Serum C-reactive protein (CRP) and Lactate Dehydrogenase (LDH) as Biomarkers for Hemotoxicity in Snakebite Victims

Resu Dilip Reddy
Sri Devaraj Urs Medical Academy, Kolar, Karnataka, India

Background: Snakebite envenomation is a major medical problem in rural settings and

frequently results in hemotoxic complications. Early recognition of systemic involvement is essential to initiate timely antivenom therapy. This study evaluates the role of serum C-reactive protein (CRP) and lactate dehydrogenase (LDH) as biomarkers in assessing hemotoxicity severity in snakebite victims.

Methods: A prospective observational study was conducted, including 75 patients presenting with confirmed or suspected snakebite. Baseline hematological parameters, serum CRP, and LDH levels were measured at admission and repeated after 24 hours. Patients were categorized into severity groups based on clinical and laboratory indicators of hemotoxicity. Data were analyzed using descriptive statistics and comparative evaluation across severity categories.

Results: Most patients were below 50 years of age, and lower limb bites were predominant. Moderate envenomation was the most commonly observed category. Elevated CRP and LDH levels showed a positive correlation with the severity of hemotoxic envenomation. All patients with severe envenomation demonstrated markedly increased CRP and LDH levels. Coagulation abnormalities were also more frequent in severe cases.

Conclusion: Serum CRP and LDH serve as useful adjunct biomarkers for assessing the severity of hemotoxic snakebite envenomation. Their routine use may aid in early risk stratification and clinical decision-making.

Keywords: Snakebite, Hemotoxicity, CRP, LDH, Biomarkers, Envenomation.

To Study the Clinical Profile and Outcome of Acute Poisoning Cases at a Tertiary Care Hospital in Ongole

Miriyala Venkatesh, S. Durga Prasad, P. Padmalatha, U. Nirmala, Ch Sai Pradeep Kumar

Government Medical College, Ongole, Andhra Pradesh, India

Background: Acute poisoning is a significant medical emergency and a leading cause of morbidity and mortality, particularly in developing countries. It predominantly affects the younger population. Understanding the regional patterns of poisoning, demographic profiles, and clinical outcomes is essential for formulating effective preventive strategies and improving critical care management in tertiary settings.

Aim: To study the clinical profile, demographic patterns, types of poisons consumed, and treatment outcomes of acute poisoning cases admitted to the Department of General Medicine.

Methods: A prospective observational study was conducted on 100 adult patients admitted with acute poisoning at Government General Hospital, Ongole, over a period of two months (August–September). Patients aged ≥18 years with a confirmed history or clinical diagnosis of poisoning were included. Detailed clinical history, time of ingestion, nature of poison, and lag time (delay in presentation) were recorded. Outcomes were assessed in terms of discharge, death.

Results: Out of 100 patients, females (59%) outnumbered males (41%). The majority of cases were from rural areas (78%), while 22% were from urban backgrounds. The most affected age group was 20–30 years (46%), followed by 40–49 years (24%). The average delay between poison ingestion and hospital arrival was 6.32 hours. The most common mode of poisoning was the consumption of multiple tablets (35%), followed by rodenticides (28%) and organophosphorus compounds (13%). Other agents included Vasmol (5%), ant powder (4%), bathroom acid/cleaner (4%), phenol (3%), and paraquat (3%). Regarding outcomes, 87% of patients were successfully discharged, while the mortality rate was 13%. Paraquat showed 100% mortality (3/3, all presented >6 hours). Rodenticide showed 32.1% mortality (9/28) with 5.6% in early presentation (<6 hours) and 80% in delayed presentation (>6 hours) ($p<0.01$). Organophosphorus achieved 0% mortality (0/13) with specific antidote therapy. Vasmol showed 20% mortality (1/5). Multiple tablets all discharged (35/35). Cases presenting >6 hours showed 37.1% mortality versus 0% in <4 hours presentation ($p<0.01$). Age specific mortality: 20-29 years 6.5%, 30-39 years 5%, 40-49 years 8.3%, with nil mortality in <20 and >50 years. Sex specific: males 7.3% mortality, females 5.1% ($p = 0.048$). Rural 6.4%, urban 4.5%

Conclusion: Acute poisoning is highly prevalent among young females and rural populations in this region. The ingestion of multiple tablets and rodenticides has emerged as a dominant trend, shifting away from traditional agents like organophosphorus compounds. Despite an average presentation delay of over 6 hours, the survival rate remains high (87%) with timely tertiary care intervention. Public health awareness targeting young adults and stricter regulation of household poisons are recommended.

Keywords: acute poisoning, rodenticide, overdose, tertiary care, clinical outcome.

Pulmonology

Exploring Optimal Blood Neutrophil Count and Neutrophil-to-lymphocyte Ratio Thresholds for Guiding Inhaled Corticosteroid Prescribing in Chronic Obstructive Pulmonary Disease: A Prospective Observational Cohort Study

Dipayan Bhattacharjee, VRA Ganguly

ESI-PGIMSR and ESIC Medical College and Hospital, Kolkata, West Bengal, India

Background: Chronic obstructive pulmonary disease (COPD) is predominantly a neutrophilic airway disorder, yet decisions on inhaled corticosteroid (ICS) therapy rely almost exclusively on blood eosinophil counts. GOLD guidelines recommend ICS initiation at eosinophil levels >300 cells/μL and consideration in the 100–300 cells/μL range for patients with frequent exacerbations. This study investigated whether blood neutrophil count (BNC) and neutrophil-to-lymphocyte ratio (NLR) could serve as additional biomarkers to refine patient selection, optimize outcomes, and minimize unnecessary corticosteroid exposure and related adverse events.

Methodology: We conducted a prospective, single-center cohort study enrolling 150 adults with spirometry-confirmed COPD (GOLD stage 2–4) who recently commenced ICS therapy per guidelines. Patients were prescribed ICS/LABA or triple therapy (ICS/LABA/LAMA) according to clinical indication. Baseline data included demographics, smoking history, comorbidities, spirometry, and symptom burden (COPD Assessment Test and St. George's Respiratory Questionnaire). Blood samples were analyzed for eosinophils, neutrophils, and lymphocytes, with NLR calculated accordingly. Patients were followed every three months for 12 months, recording moderate/severe exacerbations, post-bronchodilator FEV_1 change, health-related quality of life, and pneumonia episodes. Multivariable regression, receiver operating characteristic (ROC) analysis, and Cox proportional hazards models were applied to identify biomarker thresholds predictive of ICS benefit.

Results: ROC analysis identified BNC >6.4×10^9/L and NLR >4.8 as optimal thresholds discriminating ICS responders from non-responders (AUC 0.70 and 0.74, respectively). Patients with elevated biomarkers had significantly higher exacerbation rates (1.6 vs 0.8/year , $p = 0.02$), smaller FEV_1 improvements (+50 vs +100 mL, $p=0.03$); however, a non-significant excess in pneumonia incidence (10% vs 6%, $p=0.18$). Cox survival curves demonstrated shorter exacerbation-free survival among high-biomarker patients (HR 1.4, 95% CI 1.1–1.8, $p<0.05$), independent of age, smoking status, baseline lung function, and prior exacerbation history. Kaplan–Meier and Cox analyses of time-to-first exacerbation confirmed shorter exacerbation-free survival in the high-biomarker group (HR 1.4, 95% CI 1.1–1.8, $p<0.05$), independent of age, smoking, lung function, and prior exacerbations.

Conclusion: Elevated BNC (>6.4×10^9/L) or NLR (>4.8) were independently associated with diminished ICS responsiveness, characterized by fewer exacerbation reductions, smaller lung function gains, and earlier exacerbations. While these findings have the potential of creating neutrophil-based thresholds to complement eosinophil-guided strategies, validation in larger multicenter cohorts is required before clinical implementation. This table summarizes exacerbation rates, FEV_1 changes, and pneumonia incidence by biomarker strata.

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Table 1: Clinical outcomes by baseline BNC (>6.4×10^9/L) and NLR (>4.8)

Biomarker Group	*N (=150)*	*Exacerbations / Year (Mean ± SD)*	*ΔFEV_1 (mL) (Mean ± SD)*	*Pneumonia (%)*	*p-value*
BNC ≤ 6.4×10^9/L	82	0.8 ± 0.3	+105 ± 40	6	–
BNC > 6.4×10^9/L	68	1.6 ± 0.5	+45 ± 30	10	0.02
NLR ≤ 4.8	79	0.7 ± 0.2	+110 ± 35	5	–
NLR > 4.8	71	1.5 ± 0.4	+50 ± 25	9	0.01

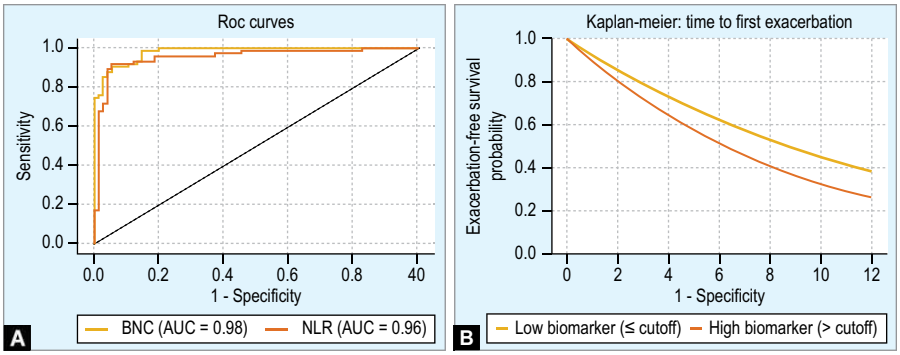

Fig. 1: ROC and survival analysis of neutrophil biomarkers in COPD: Panel (A), ROC curves for baseline blood neutrophil count (BNC) and neutrophil-to-lymphocyte ratio (NLR) predicting ICS responsiveness. Optimal thresholds were BNC >6.4×10^9/L and NLR >4.8 (AUC 0.70 and 0.74); panel (B) Kaplan–Meier curves showing shorter exacerbation-free survival in patients above these cut-offs (HR 1.4, 95% CI 1.1–1.8, p<0.05)

A Comparative Analysis of DECAF, CURB 65, and BAP-65 Scoring Systems for Predicting In-hospital Mortality in Patients With Acute Exacerbation of COPD

Ankita S Jain, Adarsh LS

JSS Academy of Higher Education and Research, Mysuru, Karnataka, India

Introduction: Chronic obstructive pulmonary disease (COPD) is a respiratory condition marked by gradually worsening airflow obstruction and destruction of lung tissue. Patients with Acute Exacerbation of COPD may exhibit signs and symptoms that are more severe than those seen at baseline. Identifying patients at high risk of mortality is crucial for making informed clinical decisions and allocating resources effectively. Numerous scoring systems have been created to forecast death in patients with Acute Exacerbation of COPD; however, there is little information comparing the precision and dependability of these methods. This study is therefore being carried out. Our study also analyzed among the three scores which was a better predictor for the need of a mechanical ventilator.

Objectives: To compare the precision of DECAF, CURB -65, and BAP-65 scoring systems in predicting in-hospital mortality in patients presenting with acute exacerbation of COPD. Evaluate the accuracy of the DECAF, CURB-65, AND BAP-65 scoring systems for predicting in-hospital mortality in patients with acute exacerbation of COPD and compare the predictive power of DECAF, CURB-65, AND BAP-65 scoring systems in identifying patients at high risk of in-hospital mortality.

Methodology: This was a prospective cross-sectional study conducted over a period of 18 months in the Department of General Medicine, in our hospital, amongst patients admitted to the hospital with Acute Exacerbation of COPD. Patients with a confirmed diagnosis of COPD according to GOLD criteria and admitted to the hospital with an Acute Exacerbation of COPD were included in the study. The sample size was calculated to be 386. A convenience sampling technique was used. The data was collected through the structured proforma, including all the relevant parameters in DECAF, CURB 65, and BAP 65 scales after getting informed written consent. The patients were followed up daily until discharge or death. The data was then entered and analyzed using IBM SPSS software version 26.

Results: In our study, on comparison of the three tools, the DECAF score was found to be the best predictor of mortality among Acute Exacerbation of COPD patients with an area under ROC curve of 0.935, followed by the CURB 65 score and BAP 65 score. DECAF score ≥4 is the best cutoff point and predicts mortality with a sensitivity of 0.882 and specificity of 0.866. The DECAF score was found to be the best predictor of mechanical ventilation among AECOPD patients.

Table 1: Area under ROC curve for mortality

Test result variable (s)	*Area under curve*	*p-value*	*95% confidence interval*	
			Lower bound	*Upper bound*
CURB-65	0.841	0.000	0.764	0.918
BAP	0.828	0.000	0.749	0.906
DECAF	0.935	0.000	0.907	0.963

Table 2: Area under ROC curve for mechanical ventilation

Result variable(s)	*Area under curve*	*p-value*	*95% confidence interval*	
			Lower bound	*Upper bound*
CURB65	0.726	0.000	0.618	0.833
BAP	0.691	0.003	0.575	0.808
DECAF	0.833	0.000	0.777	0.889

Conclusion: We conclude that in our study, on comparison of the three tools, the DECAF score was found to be the best predictor of mortality among AECOPD patients (area under ROC curve of 0.935) followed by CURB 65 score (area under ROC curve = 0.841) and BAP score (area under ROC curve = 0.828). A DECAF score ≥4 is the best cut off point and predicts mortality with a sensitivity of 0.882 and specificity of 0.866. Our study also demonstrates that DECAF score was found to be the best predictor of mechanical ventilation among AECOPD patients with area under ROC curve of 0.833 followed by the CURB 65 score (area under ROC curve = 0.726) and BAP score (area under the ROC curve = 0.691). All three scoring systems seem to be simple and promising models for predicting mortality outcomes and the need for mechanical ventilation in AECOPD. The study recommends using the DECAF score for predicting mortality and the need for mechanical ventilation.

Keywords: AECOPD, CURB 65, BAP 65, DECAF, predicting mortality.

A Study on Evaluation of Cardiac Function in COPD Patients by Dual Approach Using Electrocardiogram and Echocardiography in Tertiary Care Hospital

Chiguru Sai Pradeep Kumar, S Durgaprasad, P Padmalatha, U Nirmala, M Venkatesh

Government General Hospital, Ongole, Andhra Pradesh, India

Background: Cardiac dysfunction is a major contributor to morbidity and mortality in COPD. Pulmonary hypertension, right-ventricular (RV) abnormalities, and left-ventricular (LV) impairment often remain clinically silent. ECG provides early electrical clues, while echocardiography offers structural and hemodynamic assessment. A combined evaluation may improve the detection of cardiac involvement.

Objectives: To assess ECG and echocardiographic abnormalities in COPD patients, determine the prevalence of cardiac involvement, and correlate findings with COPD severity using a dual-modality approach.

Methods: A cross-sectional study was conducted on 50 spirometry-confirmed COPD patients in a tertiary-care hospital. Clinical data, GOLD stage, ECG changes, and echocardiographic parameters (RV size/function, pulmonary artery systolic pressure, and LV performance) were recorded and analyzed.

Results: Of 50 patients, 78% were male; 76% were smokers. Most belonged to the 61–70-year group. GOLD staging showed 22% mild, 50% moderate, 26% severe, and 2% very severe COPD. ECG abnormalities included P-pulmonale (36%), right axis deviation (28%), right bundle branch block (12%), and ST-T changes (8%). ECG evidence of pulmonary hypertension was present in 64%. Echocardiography revealed pulmonary hypertension in 58% (mild 34%, moderate 16%, and severe 8%), RV hypertrophy in 24%, RV dilatation in 20%, tricuspid regurgitation in 54%, and LV systolic dysfunction in 12%. Cardiac abnormalities increased with advancing GOLD stage.

Conclusion: Cardiac involvement is highly prevalent in COPD, even in moderate disease. The combined use of ECG and echocardiography enhances early detection of pulmonary hypertension and ventricular dysfunction. Routine dual-modality assessment is recommended for comprehensive evaluation and improved clinical outcomes in COPD patients.

Keywords: COPD, Pulmonary Hypertension, Electrocardiogram, Echocardiography, Right-ventricular Dysfunction.

Prognostic Value of Neutrophil to Lymphocyte, Platelet to Lymphocyte, Eosinophil to Lymphocyte, and Lymphocyte to Monocyte Ratios in Acute Exacerbation of Chronic Obstructive Pulmonary Disease

Drishti Singhal, Sudhir Chhabra, Moonish Agarwal, Chandramani Panjabi

Departments of General Medicine and Pulmonology, Mata Chanan Devi Hospital, New Delhi, India

Introduction: Chronic obstructive pulmonary disease (COPD) remains a significant global health concern, with acute exacerbations (AECOPD) contributing markedly to increased morbidity, mortality, and healthcare burden. Identifying reliable, cost-effective, and easily accessible prognostic markers is essential for timely risk stratification and management. This study aimed to evaluate the prognostic value of blood-based inflammatory markers, viz., neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), eosinophil-to-lymphocyte ratio (ELR), and lymphocyte-to-monocyte ratio (LMR) in patients hospitalized with AECOPD.

Methods: A prospective observational study was conducted over 18 months at Mata Chanan Devi Hospital, New Delhi, including 80 AECOPD patients aged over 18 years. Blood samples were collected within 24 hours of admission to calculate NLR, PLR, ELR, and LMR. Patients were followed for 4 weeks and categorized into survival and mortality

groups. These markers were evaluated for their association with mortality, hospital and ICU stay, and ventilatory requirements.
Results: Most patients were elderly males, with hypertension being the most common comorbidity. NLR and PLR showed significant prognostic value. NLR > 4.58 and PLR > 207.42 predicted mortality after 4 weeks, while NLR > 7 and PLR > 266.41 predicted mortality within 4 weeks. NLR was the best predictor of 4-week mortality (AUC = 0.785, $p < 0.001$), with 100% sensitivity. PLR also had good discriminatory power (AUC = 0.782, $p = 0.001$). Both NLR ($p = 0.014$) and PLR ($p = 0.015$) were significantly higher in patients who died. NLR showed a weak but significant positive correlation with hospital stay ($r = 0.298$, $p = 0.007$) and ICU stay ($r = 0.296$, $p = 0.008$). Higher NLR ($p = 0.007$) and PLR ($p = 0.031$) were also associated with prolonged ICU stay. ELR and LMR showed no significant associations with clinical outcomes or ventilation requirements.
Conclusion: NLR and PLR are affordable, accessible markers with significant prognostic value in AECOPD.

Role of DECAF Score in Predicting In-hospital Mortality in Acute Exacerbation of COPD Patients

MG Shaikh, RK Khare, V Parmar
Department of Medicine, IIMS and Research, Lucknow, Uttar Pradesh, India

Background: Acute exacerbation of chronic obstructive pulmonary disease (AECOPD) is a major cause of morbidity, mortality, and hospital admissions worldwide. Early risk stratification is essential to guide management, predict outcomes, and optimize resource utilization. The DECAF score (Dyspnea, Eosinopenia, Consolidation, Acidemia, Atrial Fibrillation) is a simple bedside tool shown to predict in-hospital mortality in AECOPD.
Objectives: To evaluate the role of the DECAF score in predicting in-hospital mortality among patients admitted with AECOPD, and to assess its accuracy in identifying high-risk patients.
Methods: This observational study was conducted among patients admitted with a clinical diagnosis of AECOPD. DECAF scoring was performed at admission using standard parameters. Patients were categorized into low (0–1), intermediate (2), and high-risk (≥3) groups. Clinical outcomes, including need for non-invasive ventilation, ICU admission, length of hospital stay, and in-hospital mortality, were recorded. Statistical analysis included ROC curve assessment of the DECAF score for the prediction of mortality.
Results: A total of 150 patients were included (mean age 60 years; 70% males). Overall, in-hospital mortality was 22.66%. Mortality increased significantly with rising DECAF score:
Low-risk (0–1): 0%
Intermediate-risk (2): 3%
High-risk (≥3): 55%
The DECAF score demonstrated strong predictive ability for in-hospital mortality with an AUC of 0.83 ($p < 0.05$). Higher DECAF scores were also associated with increased need for ventilatory support and longer hospitalization.
Conclusion: The DECAF score is a reliable, simple, and effective tool for early prediction of in-hospital mortality among AECOPD patients. Routine use of DECAF at admission can help clinicians identify high-risk patients, prioritize interventions, and improve clinical outcomes.

Assessment of Severity and Functional Status in COPD Patients by Using COPD Assessment Test and Clinical COPD Questionnaire

A Amarnath Reddy, Uma MA
PES Institute of Medical Sciences and Research, Kuppam, Andhra Pradesh, India

Background: The Global Initiative for Chronic Obstructive Lung Disease (GOLD) recommends assessing symptom burden, exacerbation history, and health status for a comprehensive evaluation. The COPD Assessment Test (CAT) is a simple, validated, patient-completed tool that addresses the limitations of complex CRQ questionnaires. The BODE index, incorporating BMI, airflow limitation, dyspnea, and exercise capacity, offers a broader view of disease severity and mortality. This study highlights the usefulness of tools like CAT, CCQ, and the BODE index in assessing COPD's impact, improving physician-patient communication, and guiding management in everyday practice.
Materials and methods: This cross-sectional study included COPD patients admitted to the Department of General Medicine, PES Institute of Medical Sciences and Research, Kuppam, over 1.5 years. Diagnosis was based on GOLD guidelines. Spirometry was used for disease classification. Standard methods were used for biochemical and anthropometric measurements. Chest X-ray, pulmonary function tests, and CT thorax were done when indicated. Health status was assessed using CAT and the Clinical COPD Questionnaire (CCQ), with assistance provided during administration. The BODE index was calculated using BMI, FEV_1, the MMRC dyspnea scale, and the 6-minute walk distance. Data were compiled and analyzed.
Results: Among 60 participants, 75% were male, mostly aged 61–70 years. Smoking (70%) and biomass exposure (36.7%) were key risk factors. Moderate symptom severity was noted using CAT (46.7%) and CCQ (53.3%). Most had BODE scores between 3 and 4. Strong positive correlations were found between CAT, CCQ, and the BODE Index ($R > 0.74$, $p < 0.0001$), and with FEV1 and 6-minute walk distance.
Conclusion: The study demonstrates that the CCQ, CAT, and BODE Index are reliable, simple tools that reflect disease severity and functional status in COPD patients and should be incorporated into routine assessment.

Rheumatology

Catastrophic Seronegative Antiphospholipid Antibody Syndrome in Pregnancy: A Diagnostic Challenge

Mohammed Imtiyaz Qureshi
Continental Hospital, Hyderabad, Telangana, India

Background: Catastrophic seronegative antiphospholipid antibody syndrome represents a rare and challenging diagnosis when standard antibody tests are negative despite multiple organ involvement and thrombotic manifestations.
Case presentation: A nineteen-year-old primigravida at twelve weeks of gestation presented with acute dyspnea. Two-dimensional echocardiography revealed right heart strain. CT pulmonary angiogram confirmed pulmonary thromboembolism with subsequent pregnancy loss. During intensive care, an abdominal ultrasound demonstrated hepatic artery thrombosis. After sedation weaning, she developed right-sided upper and lower limb weakness with zero out of five power. MRI brain showed left middle cerebral artery infarct.
Results: Laboratory investigations revealed negative lupus anticoagulant, anticardiolipin, and beta-two-glycoprotein-one antibodies. Inherited thrombophilia screening, including Factor V Leiden, protein C and S deficiencies, and antithrombin levels, was normal. Despite negative serology, multiple thrombotic events affecting three organ systems, including pregnancy loss, pulmonary embolism, hepatic thrombosis, and stroke, fulfilled criteria for catastrophic seronegative antiphospholipid syndrome.
Treatment and outcome: High-dose corticosteroids and anticoagulation with warfarin resulted in significant neurological improvement with power recovering to three out of five. The patient was discharged with good functional recovery.
Conclusion: Catastrophic seronegative APS should be considered in young patients with rapid-onset multiple thrombotic events affecting different organ systems despite negative antibody testing, emphasizing clinical criteria and urgent intervention.

An Unusual Presentation of Systemic Lupus Erythematosus

Amrutha Sai, K Rambabu
First-year Postgraduate, Department of General Medicine, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India; Professor, Department of General Medicine, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India

Background: SLE is suspected based on the presence of Cutaneous and Multiorgan involvement. Juvenile SLE commonly presents with renal, neurological and hematological involvement. But the involvement of muscles and lungs is not common
Investigations: Evaluation showed raised ESR, CPK is 5350IU/ml and Chest X-ray showed ground glass opacities in the lung fields. The CT chest showed features of interstitial lung disease. The echogram revealed massive pericardial effusion. Muscle Biopsy showed features suggestive of inflammatory myositis. Serology showed ANA, Anti-Smith, and Anti-U1RNP positivity.
Case report: A 16-year-old girl presented with progressive proximal myopathy involving upper and lower limbs. There is no history of Arthritis, oral ulcers, or rash. Systemic examination showed bilateral coarse crepitus, muffled heart sounds, and loud P2.
Musculoskeletal examination showed power 3/5 in the proximal muscles of upper and lower limbs.
Conclusions: An unusual clinical presentation with muscle and lung involvement in a case of juvenile SLE. An early identification and timely therapy would result in a better outcome.

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Clinicopathological Profile of Systemic Lupus Erythematosus Patients in Sub-himalayan West Bengal

Swarnadip Hazra, S Mitra, D Bandyopadhyay
North Bengal Medical College, West Bengal, India

Introduction: Systemic lupus erythematosus is an autoimmune disorder with diverse heterogeneity.

The ethnic variability of sub-Himalayan West Bengal offers a unique opportunity to understand the clinical profile of this multi-systemic disease.

Methodology: A cross-sectional hospital-based descriptive study was conducted with 60 patients who met the 2019 EULAR diagnostic criteria for SLE. Their demographic, clinical, biochemical, and immunological data were collected and analyzed by SPSS V25. Statistical analyses were performed to arrive at significances.

Result: 90% of the study participants were female with a mean age of 30.6 years. 58% of participants had hematological abnormalities, including anemia (53%) and pancytopenia (16%). Systems affected included renal (73%), respiratory (60%), hematologic (58%), cutaneous (55%), CVS (35%), and CNS (15%). Among lupus nephritis, Class V (26.6%), Class IV (23.3%), and Class III (23.3%) changes were found on biopsy. Cutaneous features predominated with alopecia (65%), photosensitivity (55%), and malar rash (55%). Low C3/C4 (70%) and anti-dsDNA positivity (72.4%) were significantly linked to renal disease ($p = 0.047$). Significant correlation was found between renal and respiratory involvement ($p = 0.002$) and malar rash and photosensitivity ($p = 0.011$).

Conclusion: The preponderance of renal and hematological involvement in our study points towards a severe multisystem phenotype of SLE. Depletion of complement and anti-dsDNA continues to be an important indicator of nephritis activity. Future studies need to investigate genetic and climatic influences on organ-system involvement. This study guides the clinician to ensure early serological diagnosis of SLE and attentive evaluation of the renal and hematological parameters in our part of the country.

Cardiac Evaluation of Systemic Sclerosis Patients Using ECG and Echocardiography in a Tertiary Care Hospital of Eastern India

Digbijoy Bose, S Mitra, K Dutta, S Saha
North Bengal Medical College, West Bengal, India; Malbazar Superspeciality Hospital, West Bengal, India

Introduction: Systemic sclerosis (SSc) is a chronic autoimmune connective tissue disorder characterized by fibrosis of skin and internal organs with prominent vascular involvement. Cardiovascular complications of SSc, including pulmonary arterial hypertension (PAH), ventricular dysfunction, and conduction abnormalities, are major determinants of morbidity and mortality. Data on cardiac involvement in SSc patients is sparse from eastern India. This study aimed to assess electrocardiographic (ECG) and echocardiographic abnormalities among systemic sclerosis patients and to correlate these findings with disease duration and demographic variables.

Methodology: This hospital-based, cross-sectional, observational study was conducted over one year among 70 hemodynamically stable patients aged 15–70 years fulfilling the ACR/EULAR 2013 criteria for SSc. All participants underwent detailed clinical evaluation, ECG, and echocardiography. Data were analyzed using SPSS software; Chi-square test was applied, and $p < 0.05$ was considered statistically significant.

Results: The study population ($n = 50$) comprised 80% females, with the majority aged 31–40 years. Disease duration exceeded 10 years in 35.7% of patients. ECG abnormalities were observed in 30% of cases, with right bundle branch block (10%) being the most frequent, followed by left bundle branch block (4%) and bifascicular block (3%). Echocardiography revealed PAH in 20% and right ventricular dysfunction in 10% of patients. Left ventricular systolic and diastolic dysfunction were present in 3% and 5.7%, respectively, while pericardial effusion was detected in 10% (6% mild, 1% moderate, 3% severe). The prevalence of PAH increased significantly with disease duration, with 4.5% in patients with ≤5 years of disease versus 32% in those with >10 years ($p < 0.05$).

Conclusion: Cardiac involvement in SSc is frequent and increases with disease duration. PAH and right ventricular dysfunction are clinically significant findings, while conduction abnormalities such as bundle branch block represent the most common but innocuous ECG changes. Left ventricular diastolic dysfunction exceeds systolic dysfunction. Early detection through routine ECG and echocardiography may facilitate timely intervention, potentially improving outcomes in systemic sclerosis patients.

Association of Neutrophil-to-lymphocyte and Platelet-to-lymphocyte Ratios with Disease Activity in Rheumatoid Arthritis Using DAS28-CRP

Parul Sharma, S Meena, GS Pangtey, A Prakash, R Aggarwal
Lady Hardinge Medical College and Smt Sucheta Kriplani Hospital, New Delhi, India

Introduction: Neutrophil–lymphocyte ratio (NLR) and platelet–lymphocyte ratio (PLR), derived from complete blood counts, reflect systemic inflammation by balancing innate and adaptive immune responses. In rheumatoid arthritis (RA), persistent synovitis elevates these indices.

Objective: To assess the correlation between NLR and PLR with disease activity in RA, using the Disease Activity Score 28 with CRP (DAS28–CRP).

Methods: An observational cross-sectional study was conducted among 85 adults fulfilling ACR/EULAR 2010 criteria for RA at a tertiary care hospital in New Delhi. Clinical and laboratory parameters were recorded, and disease activity was assessed using DAS28–CRP. Patients were categorized as remission (<2.6), low (2.6–3.2), moderate (3.2–5.1), or high (>5.1) activity, and grouped as Group A (remission + low) and Group B (moderate + high). Correlation between NLR, PLR, and DAS28–CRP was analyzed using Spearman's coefficient.

Results: Mean age was 41.6 ± 11.8 years; females comprised 91.8%. Distribution of disease activity was 15.3% remission, 20% low, 45.9% moderate, and 18.8% high. Mean NLR and PLR were higher in Group B (3.5, 155) than in Group A (2.1, 113). NLR showed a strong positive correlation with DAS28–CRP ($r = 0.604$, $p < 0.001$) and PLR also correlated significantly ($r = 0.464$, $p < 0.001$).

Conclusion: NLR and PLR strongly correlate with RA disease activity and reflect systemic inflammation. As simple, inexpensive biomarkers, they can complement DAS28–CRP in monitoring disease activity and guiding timely therapeutic decisions.

A Study to Assess the Predictors of Poor Renal Responses in Lupus Nephritis in a Teaching Hospital in North Bengal

Tista Har, Srijana Pradhan, Pasang L Sherpa
North Bengal Medical College Hospital, West Bengal, India

Introduction: Lupus nephritis (LN) is a serious kidney complication of systemic lupus erythematosus (SLE), affecting a significant portion of SLE patients and contributing significantly to morbidity and mortality. Diagnosing and predicting renal outcomes in LN is challenging due to its complex pathogenesis and variable clinical course. Early identification of predictors of poor renal response is essential for optimizing treatment and improving prognosis.

Methods: This prospective ambispective observational study was conducted over 18 months in the Rheumatology and Medicine departments of North Bengal Medical College, Darjeeling. Sixty biopsy-proven LN patients classified according to the International Society of Nephrology-Renal Pathology Society (ISN-RPS) 2003 classification were enrolled. Clinical features, laboratory parameters including anti-dsDNA, complements, proteinuria, and serum creatinine, and socio-demographic variables were collected at baseline and during follow-up. Renal response was assessed based on proteinuria reduction and renal function normalization. Statistical analyses identified predictors of poor renal response.

Results: The majority of patients were females (98.3%) with mean age around mid-20s. Class III and IV lupus nephritis predominated. Significant predictors of poor renal response included higher baseline serum creatinine, severe proteinuria, hypertension, and histological chronicity index. Early achievement of complete remission was associated with better renal outcomes. Patients with partial remission or persistent proteinuria had poorer prognosis. Immunosuppressive regimens affected response rates.

Conclusion: Multiple clinical, histological, and laboratory parameters contribute to effectively predicting renal outcomes in lupus nephritis. Early recognition and intervention in patients with poor prognostic markers can improve renal response and reduce progression to end-stage renal disease, enhancing patient care quality.

Left Ventricular Diastolic Dysfunction Among Patients with Rheumatoid Arthritis

Ashwini C, Barman B, Bharadwaj R
PGT, Department of General Medicine, AIIMS, Guwahati, All India Institute of Medical Sciences, Guwahati, Assam, India; Professsor and Head, Department of General Medicine, AIIMS, Guwahati, All India Institute of Medical Sciences, Guwahati, Assam, India; Assistant Professor, Department of Cardiology, AIIMS, Guwahati, All India Institute of Medical Sciences, Guwahati, Assam, India

Background: Rheumatoid arthritis (RA) increases cardiovascular risk, including left ventricular diastolic dysfunction (LVDD). Limited data exist on the link between RA disease activity and LVDD severity. We present preliminary findings from 95 cases to explore this relationship and inform early detection and targeted management strategies in RA patients.

Methods: This hospital-based cross-sectional study, conducted over one year at the Department of General Medicine, AIIMS Guwahati, included newly diagnosed and existing rheumatoid arthritis (RA) patients meeting the 2010 ACR-EULAR criteria. After obtaining informed consent, patients underwent thorough clinical examinations and laboratory tests, including erythrocyte sedimentation rate and C-reactive protein. Two-dimensional echocardiography assessed diastolic dysfunction severity. Data analysis utilized MS Office 365, employing percentages, Chi-square tests, and regression analysis. The study aimed to evaluate clinical and laboratory profiles of RA patients to understand disease characteristics and associated cardiac complications.

Results: Among 95 patients (84% females) with a mean age of 49.1 ± 11.33 years. 85% of them were seropositive and the mean duration of the disease was 58.1± 5.27 years. The mean DAS 28 ESR and DAS 28 CRP were 5.12 ±4.69 and 4.16 ±1.15 respectively. There was a positive correlation between DAS28CRP and DAS28ESR with the grade

of diastolic dysfunction, p-value (0.0056 and 0.0042), respectively.

Conclusion: In the current preliminary study 75% of the patients had diastolic dysfunction. There was a positive correlation between DAS28CRP and DAS28ESR with Grade of diastolic dysfunction. So, as the disease severity increases, concurrently grade of LVDD increases. There was no correlation between duration of disease and gender with grade of diastolic dysfunction.