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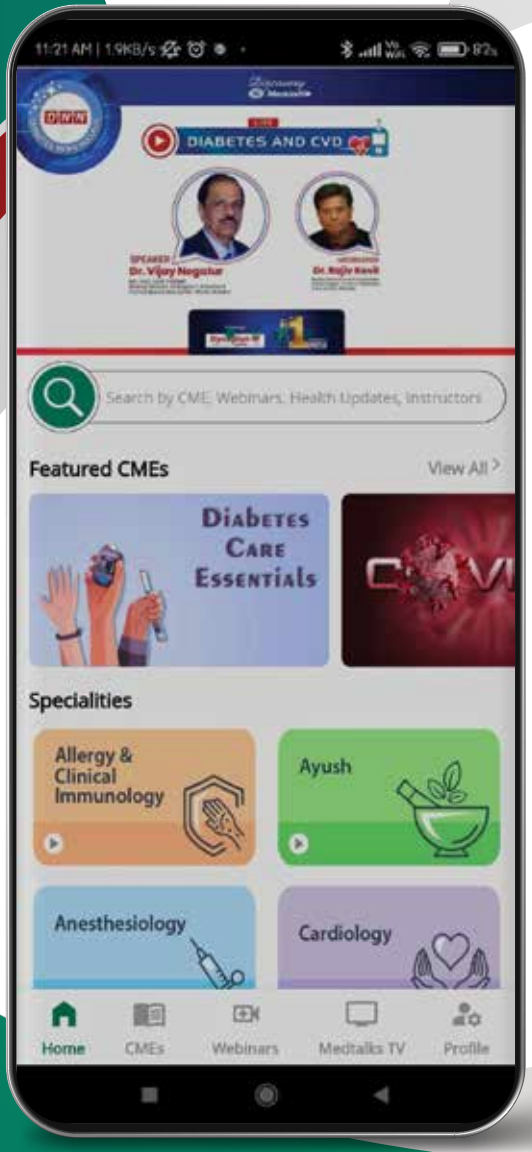

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CONTENT

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EDITORIAL

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Diabetes India has evolved as one of the leading platforms for affirmative clinical care, academics and advocacy in the country. Its conferences are attended by students, clinicians, researchers and policymakers, who seek upgradation of knowledge. This enhancement is bidirectional, as participants learn from each other's experience and expertize.

One way of sharing information is through presentation of abstracts. The Diabetes India 2025 conference[1] has received x abstracts, of which y have been accepted for oral, and z for poster presentation.

These cover the entire spectrum of diabetes,[2] from neonatology and pediatrics to pregnancy and geriatrics; from public health to clinical care; from diagnostics and monitoring to therapeutics and health care delivery.

The interface of diabetes with varied specialties, including endocrinology, cardiology and nephrology is explored through these abstract. Sister disciplines, such as dentistry, rheumatology surgery and orthopedics are also highlighted.

Randomized controlled trials, observational trials, retrospective trials, case series and case reports have been submitted. Both narrative and systemic reviews find a place in the collection of abstracts being presented at Ahmedabad.

It is heartening to note that our authors, are from a diverse range of backgrounds, including teaching hospitals, medical colleges, corporate centres, and private practice.

The number, and quality, of abstracts received at Diabetes India over the past years shows a positive trend. This augurs well for the future of diabetes care in India. Join us in our journey towards a diabetes complication-free India,[3] by reading the abstracts published in this issue of Asian Journal of Diabetology.

Share your comments, concerns and criticism through letters to the editor, and contribute towards a healthier India.

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■ ■ ■ ■

ABS0001

A Rare Case of Multiple Myeloma Presenting With Normal Calcium Levels

Author – Dr Preksha Sunil Agrawal

Multiple myeloma represents a malignant proliferation of plasma cells derived from a single clone. The tumor, its products, and the host response to it result in a number of organ dysfunctions and symptoms, including bone pain or fracture, renal failure, susceptibility to infection, anemia, hypercalcemia, and occasionally clotting abnormalities, neurologic symptoms, and manifestations of hyperviscosity.

Case History

A 55-year-old male named Uday Prakash Soni presented to LG hospital with chief complaints of back pain and neck pain since 1 month which was gradual in onset, progressive, persistent and not relieved by medication. It was associated with anorexia and generalized body ache. It was not associated with fever, cough, cold, abdominal pain, loose stools or vomit. On examination, pallor was present with no other significant finding.

Diagnosis and Management: On routine investigations;

HB - 6.2

MCV - 98.4

TLC - 6330

APC - 194000

Fe - 82

Ferritin - 102.32

B12 - 894

Urea - 65

CREAT - 2.36

Na - 137

K - 4.5

Ca - 9.1

Mg - 1.5

PO4 - 5.4

UA - 8.6

X-ray lumbosacral spine and cervical was done for persistent backache and neck pain which suggested of lytic lesions.

As anemia was present along with altered creatinine levels and lytic lesions in X-ray, multiple myeloma was kept in differential diagnosis as it was fitting in CRAB criteria.

To confirm the diagnosis:

- MRI cervical spine was done which suggested disc osteophyte complex at c3-c4 and c6-c7 indenting thecal sac.
- Protein electrophoresis was done which showed raised gamma protein (46.55%) and M band (31.88%) s/o monoclonal gammopathy. Then bone marrow biopsy was done s/o plasma cell myeloma.

Patient was advised autologous hematopoietic stem cell transplantation but patient did not comply to it. Then he was managed with Daratumumab, Lenalidomide and Dexamethasone on hematologist opinion.

Outcome: This case underscores the complexity of multiple myeloma. It emphasizes the importance of a nuanced clinical approach and evolving diagnostic criteria to effectively manage and treat patients with multiple myeloma.

ABS0002

A Close Call: Resuscitating a Patient from DKA-Induced Cardiac Arrest Case Study for Poster Presentation

Author – Dr Himanshu Gupta

Rationale for This Case Study

- **Educational:** Highlighting the severity and rapid progression of diabetic ketoacidosis (DKA), demonstrating the importance of early intervention, illustrating the interplay of contributing factors, reinforcing the importance of the ABCDE approach for patient care in emergency department.
- **Clinical Relevance:** Improving DKA recognition and management, raising awareness of DKA complications.
- **Research Implications:** Contributing to the body of knowledge on DKA, identifying areas for further investigation.

Objectives: Highlighting the severity and rapid progression of DKA, demonstrating the importance of early intervention, illustrating the interplay of contributing factors, reinforcing the importance of the ABCDE approach for patient care in emergency department.

Method of Study: Case study

Results: 56-year-old male patient with a 15-year history of type 2 diabetes mellitus (T2DM), reportedly non-compliant with his medication regimen.

Presenting Complaint: Shortness of breath and brief loss of consciousness (LOC).

History of Present Illness: The patient recently recovered from a lower respiratory tract infection (LRTI) in the past week. He presents to the casualty today with shortness of breath and a brief episode of LOC.

Clinical Findings:

- No recordable pulse on palpation
- Cardiac monitor showing ventricular fibrillation (V-fib)
- Capillary blood glucose (CBG) reading "HI" (indicating critically high blood glucose)
- Venous blood gas (VBG) showing:
  - pH: 7.1
  - Glucose: 799 mg/dL (hyperglycemia)
  - Potassium: 6.9 mEq/L (hyperkalemia)
  - Sodium: 124 mEq/L
  - Anion gap: 15 (HAGMA)

Immediate Management:

- The patient was immediately managed in the ED according to the ABCDE protocol.
- Cardiopulmonary resuscitation (CPR) initiated.
- Calcium gluconate administered intravenously to address hyperkalemia.
- Biphasic defibrillation at 200 J delivered.
- Endotracheal intubation performed to secure the airway.
- 2 liters of IV fluid bolus given for resuscitation.
- Human Actrapid insulin infusion started, with the dose titrated according to his weight.
- Inotropic/vasopressor support initiated to stabilize hemodynamics.
- Return of spontaneous circulation (ROSC) achieved after defibrillation and calcium gluconate administration.
- Blood pressure in the ED after initial resuscitation: 80/42 mmHg.
- The patient was shifted to the ICU for further management.

ICU Course:

- The patient was successfully weaned off the ventilator on the second day in the ICU.
- He continued to improve and was discharged on the fifth day, hemodynamically stable.

Conclusion: This case study presents a compelling example of the life-threatening potential of diabetic ketoacidosis (DKA), particularly when compounded by factors like infection and medication non-compliance. The patient's rapid deterioration to cardiac arrest underscores the critical need for early recognition and aggressive management of DKA.

The successful resuscitation and subsequent recovery of this patient highlight the effectiveness of a multidisciplinary approach involving prompt interventions such as fluid resuscitation, insulin therapy, electrolyte correction, and hemodynamic support. The case reinforces the importance of adhering to established protocols like the ABCDE approach in managing critically ill patients.

Furthermore, this case study serves as a valuable educational tool for health care professionals, emphasizing the need for vigilance in identifying and addressing potential triggers for DKA. It also highlights the importance of patient education and adherence to treatment regimens to prevent such severe complications.

Ultimately, this case demonstrates that even in the face of life-threatening DKA and cardiac arrest, timely and appropriate interventions can lead to positive outcomes. It provides a message of hope and underscores the importance of continued research and education to improve the management and outcomes of patients with DKA.

ABS0003

A Narrative Review and Data Analysis of the Potential of Millets for Managing and Reducing the Risk of Developing Diabetes Mellitus

Authors – Dr Mukesh Darshan, Dr Prashant Verma

Millets (including sorghum) are known to be highly nutritious besides having a low carbon footprint and the ability to survive in high temperatures with minimal water. Millets are widely recognized as having a low glycemic index (GI) helping to manage diabetes. This narrative review and analyzes across the different types of millets and different forms of processing/cooking collated all evidences. Of the 45 studies that were collected globally, 29 studies with 81 observations were used to analyze GI outcomes and 18 studies were used to analyze fasting, postprandial glucose level, insulin index and HbA1c outcomes in the analysis. It was evident that the mean GI of millets is 52.7 ± 10.3, which is about 36% lower than in typical staples of milled rice (71.7 ± 14.4) and refined wheat (74.2 ± 14.9). The descriptive and regression analyses revealed that Job's tears, fonio, foxtail, barnyard, and teff were the millets with low mean GI. The analysis also showed that all millets had significantly ($p < 0.01$) lower GI than white rice, refined wheat, standard glucose or white wheat bread except little millet which had inconsistent data. Long-term millet consumption lowered fasting and postprandial blood glucose levels significantly ($p < 0.01$) by 12 and 15%, respectively, in diabetic subjects. There was a significant reduction in HbA1c level (from 6.65 ± 0.4 to 5.67 ± 0.4%) among prediabetic individuals ($p < 0.01$) who consumed millets for a long period. Minimally processed millets were 30% more effective in lowering GI of a meal compared to milled rice and refined wheat. In conclusion, millets can be beneficial in managing and reducing the risk of developing diabetes and could therefore be used to design appropriate meals for diabetic and prediabetic subjects as well as for nondiabetic people for a preventive approach.

ABS0004

A Study From Maharashtra State: Foot Examination in Prevalent Diabetic Hemodialysis Patients

Author – Dr Vajed Mogal

Aim: To analyze the occurrence of foot complications after the introduction of a standardized foot examination within an extensive cohort of prevalent diabetic hemodialysis patients across three hemodialysis centers in the Marathwada region of Maharashtra state.

Methods: A standardized foot examination was performed in 200 prevalent diabetic hemodialysis patients in Aurangabad (n = 94), Jalna (n = 56), and Beed (n = 50) in the Marathwada region of Maharashtra state for 2 years. Foot complications were categorized using the Wagner classification system, which spans grades 0 to 5. Peripheral artery disease (PAD) was assessed based on clinical pulse measurements, with classifications assigned as normal (Grade 0), weak (Grade 1), or absent (Grade 2).

Results: Based on the Gavin weighted score, in individuals with diabetic nephropathy undergoing hemodialysis, the diabetic foot risk factors were distributed as follows: 20.63% in the low-risk group, 69.84% in the medium-risk group, and 9.52% in the high-risk group. Within the diabetic nephropathy with hemodialysis cohort, cases classified as Grade 0 according to the Wagner classification amounted to 57, constituting 90.47%.

The remaining cases comprised 6 cases of diabetic foot (9.52%), along with 4 cases classified as Grade 1 (6.35%), 1 case as Grade 2 (1.59%), and 1 case as Grade 4 (1.59%), respectively.

Conclusion: The implementation of a standardized foot examination protocol among diabetic patients undergoing hemodialysis revealed a noteworthy prevalence of clinically significant complications that demand careful consideration.

Keywords: Hemodialysis, diabetic patients, Wagner classification

ABS0005

A Study on Correlation Between Location of MRI Brain Lesions with Duration and Severity of Hypoglycemia in Diabetic Patients

Authors – Dr Jawar Solanki, Dr Rakesh Kumar Bhamu, Dr Sandeep Tak

Introduction: Hypoglycemia is most commonly caused by drugs used to treat diabetes mellitus or by exposure to other drugs, including alcohol and a number of other disorders including critical organ failure, hormone deficiency etc.

Aims and Objectives: Identification of MRI changes in diabetic patient presenting with severe hypoglycemia and its effect on clinical outcome.

Material and Methods: The study was conducted in Department of General Medicine Dr SN Medical College Jodhpur, Rajasthan. Pertinent data was collected prospectively using the charts of admitted patients with severe hypoglycemia.

MRI Analysis: MRI brain were performed to find out the exact location, number and nature of lesion.

Results: Among 45 diabetic patients presented with severe hypoglycemia only 1/45 (2.22%) patient had normal MRI brain and 44/45 (97.78%) had abnormal MRI brain. In our study MRI findings out of 45 patients are: CMI changes in 43 (95.56%), acute lacunar infarcts 6 (13.33%), chronic lacunar infarct 8 (17.78%), gliosis 8 (17.78%), calcification in 3 (6.67%) patients. In study 43/45 patients (95.56%) had chronic microvascular ischemia in MRI brain. In our study acute lacunar infarct seen in thalamus 2/45 (4.44%) patients, corona radiata in 1/45 (2.22%), Centrum semiovale in 2/45 (4.44%) patients, pericallosal region in 1/45 (2.22%) patient and Frontal lobe involved in 1/45 (2.22%) patient. In this study chronic lacunar infarct seen in cerebellar hemisphere in 2/45 (4.44%) patients, capsuloganglionic area in 2/45 (4.44%) patients, centrum ovale in 1/45 (2.22%), pons in 1/45 (2.22%) patients, perisylvian area involved in (1/45) (2.22%), external capsule in 1/45 (2.22%) and frontal lobe involved in 1/45 (2.22%) patients.

Conclusion: Majority of patients with severe hypoglycemia have microvascular ischemia at presentation. Significant number of patients had lacunar infarcts (new and old). Our study highlights significant risk of neurological deficit, acute CV events and death with longer duration and severity of hypoglycemia. Education of family members of diabetics patients on how to recognize the symptoms of severe hypoglycemia and home based management of hypoglycemia is very important.

ABS0006

Anthropometry and Blood Biomarkers of Diabetes and Their Possible Association with Obesity and Metabolic Syndrome

Author – Dr Shivam Verma

Objective: To measure different anthropometric and blood biomarkers in prediabetic and diabetic patients, and their possible association with obesity and metabolic syndrome

Methods: To measure different anthropometric (height, weight, body mass index, sagittal abdominal diameter, waist circumference, hip circumference, neck circumference, waist hip ratio, triceps skin fold thickness) and blood biomarkers (fasting blood glucose, fasting serum insulin, serum uric acid) in prediabetic and diabetic patients, we collected data and blood samples from patients in a hospital OPD. This was a cross-sectional study that included the identification of possible relationships between different parameters to predict early diagnostic markers of diabetes.

Results: We found increased body mass index (BMI), fasting blood glucose, neck, waist, and hip circumference, sagittal abdominal diameter, and skin fold thickness in the diabetic as compared to the prediabetic group. Also, serum uric acid and insulin resistance (HOMA-IR) values were significantly increased in diabetic individuals. We found a significant positive correlation between serum uric acid and BMI, fasting blood glucose, serum insulin, and HOMA-IR values.

Conclusion: Here, we found that prediabetic and diabetic patients have increased fasting glucose levels while we did not find any difference in insulin levels. Both prediabetic and diabetic patients show high serum uric acid, positively associated with a higher prevalence of diabetes and HOMA-IR. Uric acid may hence be an important parameter for early diagnostics. These findings may be used as a basis for future studies that aim to identify the mechanistic details of the association of uric acid with insulin signalling and hence better understanding of the phenomenon associated with diabetes.

ABS0007

Assessment of Left Ventricular Geometry in Normotensive Type 2 Diabetics

Authors – Dr Deepak Kumar Das, Dr Smita Gupta, Dr Deep Chandra Pant

Introduction: Diabetes mellitus is one of the largest global health challenges of this century. It is a chronic progressive metabolic disease which occurs when the body cannot effectively use the insulin it produces or pancreas does not produce enough insulin which leads to hyperglycemia. Adults with diabetes mellitus are 2-3 fold increased risk of developing ischemic heart disease and stroke.[1] The International Diabetes Federation has estimated that globally there are 415 million people with diabetes in 2015 and is predicted to increase to 642 million by 2040. It is alarming to note that more than 47% of the world's population is still undiagnosed for diabetes with the prevalence still bound to increase further. This increasing incidence is mainly attributed to lifestyle changes, eating unhealthy food and being physically inactive.

Because of the increasing frequency of diabetes in the past 30 years, the importance of cardiovascular disease attributable, diabetes will continue to increase, even as its incidence in the nondiabetic population continues to diminish. Several studies have suggested that diabetes may be associated with left ventricular (LV) structural and functional abnormalities in addition to and independent of atherosclerosis. Despite improvements in preventive care for patients with type 2 diabetes, cardiovascular disease remains the most common cause of death among these patients. The European guidelines recommend that echocardiography should be considered in the diagnostic work-up of patients with type two diabetes even in the absence of known cardiovascular disease–not least because of a high prevalence of subclinical cardiac abnormalities in these patients. The cardiac changes associated with diabetes are thought to comprise thickening of the myocardium and is characterized by predominantly diastolic dysfunction, abnormal geometrical patterns and diabetic cardiomyopathy. Early screening and intervention will aid reducing the disease burden. In view of the above facts this study is being done to assess the geometrical pattern in normotensive diabetic patients using echocardiography.

Objectives: Assessment of left ventricular geometry in type 2 diabetics.

Material and Methods: Study was done after obtaining the approval from the institutional ethical committee. Total of 125 patients was selected from the diabetic OPD of medicine department and 125 nondiabetic controls were selected from the people who came for executive cardiac health check up. Demographic profile and blood pressure was recorded. Blood sample was taken in fasting state for lipid profile, blood sugar fasting and glycated hemoglobin (HbA1C). Subsequently they were taken for two-dimensionally M-mode echocardiography as per ASA guidelines for left ventricular structural assessment by Siemen's Accuson Model no. KT- LM170SDS (Made in Germany).

Results: It was observed that BMI and waist hip ratio were elevated in diabetics but there was no significant difference between the two groups. There was significant difference ($p < 0.001$) in blood sugar (fasting and PP), glycated hemoglobin and lipid profile between the two groups. A statistically significant difference was noted in left ventricular internal dimension in diastole (LVIDd), left ventricular internal dimension in systole (LVIDs), posterior wall thickness (PWT), left ventricular mass (LVM) and left ventricular mass index (LVMI) between two groups. In diabetics, 51.2% of the subjects were found to be having normal geometry, while the rest 48.8% were found to be having abnormal cardiac geometry. Amongst the abnormal patterns concentric hypertrophy was noted in 14.4%, concentric remodeling in 25.6% and eccentric hypertrophy in 8.8%. In normotensives, 74.4% of the subjects had a normal geometrical pattern of the heart while rest 25.6% had abnormal geometry consisting of concentric remodeling in 24.8% and 0.8% had eccentric hypertrophy.

Conclusion: Such findings carry prognostic implication. In diabetic patients, echocardiographic abnormalities are frequently found and associated to both cardiac symptoms and clinical characteristics. However, no single measure accurately identifies echocardiographic abnormalities with high sensitivity and specificity and hence, referral to echocardiography should be considered in most patients regardless of cardiac symptoms and clinical characteristics. Early diagnosis will help to take necessary preventive and curative measures to reduce cardiac morbidity and mortality in later period.

Keywords: Diabetes mellitus, complications, hypertrophy, echocardiography

ABS0008

Black Sapote Pasta Diet Prevents Oxidative Damage in Liver and Kidney and Improves Biochemical Parameters in Type 1 Diabetic Rats

Author – Dr Mihir Y Parmar

Objective: In this study, the effects of a black sapote pasta diet on the oxidative damage from type 2 diabetes mellitus (T2DM) were investigated.

Material and Methods: Formulations containing 25 (F25), 50 (F50), and 75% (F75) of black sapote pasta were prepared and included in a 12-week diet of Wistar rats with alloxan-induced T1DM. The effects of these formulations in preventing oxidative damage in kidneys and liver homogenates of rats were evaluated using the TBARS assay (lipid peroxidation in liver) and the DNPH assay (protein oxidation in liver and kidneys). Furthermore, the effects of the formulations on the fasting glycemia, fructosamine levels, renal function (creatinine), liver function

(enzymes aspartate aminotransferase [AST] and alanine aminotransferase [ALT]), and lipid profile (total cholesterol and fractions) in the serum of rats were evaluated in addition to the evaluation of the centesimal composition and microbiological analysis of the produced black sapote pasta.

Results: An F75 diet prevented hyperglycemia in diabetic rats ($p < 0.05$) compared to the diabetic rats fed a standard diet (commercial feed). Notably, the protein oxidation in both the liver and kidneys were prevented in diabetic rats on the F50 or F75 diets compared to the control group, whereas the lipid peroxidation was only prevented in the liver ($p < 0.05$). Moreover, all formulations prevented an increase in the amount of triglycerides in the serum of the rats. The F25 and F50 diet prevented the increase of cholesterol, and the F75-based diet of ALT and fructosamine ($p < 0.05$) supported the antihyperglycemic effects and the protection against oxidative damage.

Conclusion: The black sapote pasta (F75) diet showed great potential for preventing complications associated with diabetes.

Keyword: Diabetes mellitus, black sapote pasta, oxidative damage

ABS0009

Comorbidities and the Onset of Type 2 Diabetes Mellitus: A Cross-sectional Study

Authors – Dr Shubhashree Patil, Dr Sanjay Singla, Dr Abilash Raghunandanan, Dr Seema Bagri, Dr Ayaz Ansari, Dr Aashna Patil Dr Charusheela Kolhe, Dr Aparna Muley, Dr Tanuja Shah, Dr Mrinalini Singh, Dr Rukiya Shaikh, Dr Priti Sanghvi

Background: Type 2 diabetes mellitus (T2DM) is often associated with various comorbidities. Understanding the relationship between these comorbidities and the onset of T2DM is crucial for early intervention and management.

Aim: To investigate the prevalence of comorbidities and their association with the onset of T2DM in newly diagnosed patients.

Method: A cross-sectional study was conducted on 591 newly diagnosed T2DM patients. Demographic data, comorbidities, and time since diagnosis were collected. Patients were stratified into three groups based on age: <40 years, 41-50 years, and >50 years. *Chi*-squared tests and one-way ANOVA were used for statistical analysis.

Results: The mean age of the participants was 46.7 ± 12.4 years, with 54.1% being male. The prevalence of comorbidities increased significantly with age ($p < 0.001$). Hypertension was the most common comorbidity (28.8%), followed by hypothyroidism (7.0%) and cardiovascular diseases (2.2%). Patients aged >50 years had a significantly higher prevalence of hypertension (50.0%) compared to younger age groups ($p < 0.001$). The mean time since T2DM diagnosis was 4.5 ± 8.7 months, with no significant difference across age groups ($p = 0.008$).

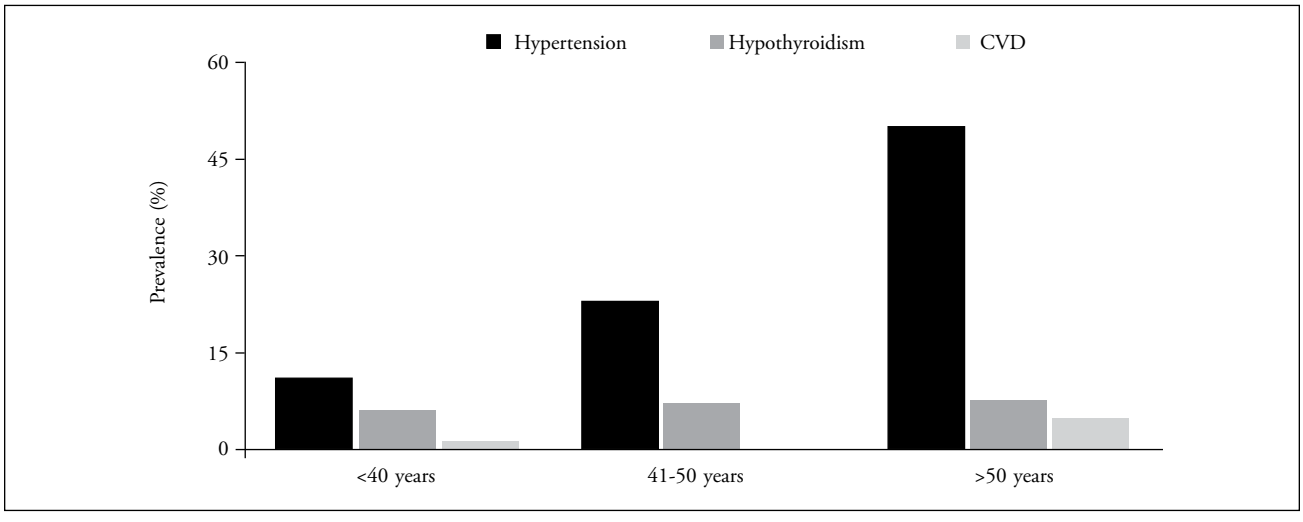

Figure 1. Illustrates the prevalence of major comorbidities across different age groups.

Conclusion: This study reveals a high prevalence of comorbidities, particularly hypertension, in newly diagnosed T2DM patients. The significant increase in comorbidities with age underscores the importance of comprehensive screening and management strategies, especially in older patients with new-onset T2DM.

ABS0010

Diabetic Mastopathy: A Case Series and Systemic Review of Literature

Authors – Dr Maitri M Patel, Dr Mukundkumar V Patel, Dr Dhruvkumar M Patel, Dr Dhara K Patel, Dr Lalitkumar B Patel

Background: Diabetic mastopathy (DMP) is a rare fibroinflammatory breast condition characterized by lymphocytic lobulitis, ductitis, perivasculitis, and stromal fibrosis. It typically manifests as a palpable unilateral or bilateral breast mass in individuals with long-standing type 1 or type 2 diabetes mellitus (T2DM).

Objectives: This study presents a case series and a systematic review of literature on DMP published up to April 2024.

Methods: This retrospective analysis reviewed 15 cases of DMP, comprising 13 females (12 with T2DM, 1 with T1DM) and 2 males (1 with T2DM, 1 with T1DM). Fourteen cases presented with unilateral breast masses, and two patients reported associated pain. The mean duration of the breast lump at the time of diagnosis was 1.55 years, with diabetes preceding the onset of DMP by an average of 19.6 years. Five patients had diabetes-related complications, and HbA1c levels ranged from 7.5% to 10.2%. Recurrence occurred in two cases, both associated with autoimmune diseases. The diagnosis was confirmed through ultrasound imaging and histopathology. Treatment strategies included analgesics, patient reassurance, and surgical excision in nine cases.

Results: Breast ultrasound emerged as the diagnostic gold standard. DMP, a rare benign breast condition, predominantly affects women with long-standing type 1 diabetes. A systematic review identified 117 cases (113 females, 4 males) with diabetes duration ranging from 4 to 79 years and breast lump duration between 0.5 and 2.5 years. About 66% of cases involved diabetes-related complications, while 14% were associated with other autoimmune diseases. The majority of cases were presented unilaterally, and 81% were managed conservatively. Rheumatoid arthritis, SLE, and hypothyroidism were aassociated in isolated cases.

Conclusion: The literature underscores the rarity of diabetic mastopathy and its strong association with long-term, poorly controlled diabetes and autoimmune mechanisms. Management is primarily conservative, focusing on optimizing diabetes control and routine monitoring to exclude malignancy.

ABS0011

Effect of Sitagliptin, Dapagliflozin and Metformin Fixed Combination in Newly Diagnosed Naïve Type 2 DM Patients

Authors – Dr Deepak Das, Dr Smita Gupta

Introduction: Type 2 diabetes mellitus (T2DM) is a chronic metabolic disorder affecting millions of individuals worldwide. Effective management of T2DM is crucial to prevent complications. Emerging studies highlight the cardiovascular advantages of sodium-glucose transport protein 2 (SGLT2) and dipeptidyl peptidase 4 (DPP-4) inhibitors in T2DM. This investigation delves into the synergistic effects of the fixed-dose combination (FDC) of sitagliptin, dapagliflozin and metformin, offering insights into its safety and efficacy for the Indian population.

Aim and Objective: Effect of sitagliptin, dapagliflozin and metformin fixed combination in newly diagnosed naive type 2 DM patients.

Material and Methods: This real-world, prospective, observational study including 30 newly diagnosed naïve cases evaluating the safety, efficacy, and clinical utilization of the sitagliptin, dapagliflozin and metformin FDC in T2DM patients after obtaining ethical approval. Assessments at baseline, Week 4, Week 8 and Week 12 encompassed hemoglobin A1C (HbA1C), fasting plasma glucose (FPG), postprandial blood glucose (PPBG), lipid profile, systolic blood pressure (SBP), diastolic blood pressure (DBP), urine examination and weight change. The statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 29.0.1.0(171) (IBM Corp., Armonk, NY, USA) with a significance level $p < 0.05$. Continuous variables were tested using repeated measures analysis of covariance (ANCOVA) or a two-sample *t*-test. The *chi*-square test was used to statistically test categorical variables.

Results: It shows statistically significant difference in case of FBS, PPBS, HbA1C, and reduction in DBP. Few hypoglycemia events were reported and none led to treatment discontinuation. A low incidence of genital and urinary tract infections was reported. One patient has urticaria and itching.

Discussion: The FDC of Dapa + Sita + Met acts synergistically to target multiple aspects of diabetes, including insulin resistance, impaired insulin secretion, glucagon excess, increased renal glucose reabsorption, hepatic glucose overproduction, decreased incretin effect and increased lipolysis. Thus, it addresses seven out of the eight pathways outlined in the "ominous octet" model of diabetes pathophysiology. Furthermore, the triple FDC offers potential benefits such as weight loss, cardiovascular risk reduction and renal protection. The integration of these mechanisms aligns with current theoretical frameworks making it a promising interventional strategy for T2DM management in India. The introduction of the triple FDC not only represents a pharmacological advancement but also addresses economic and accessibility challenges in the Indian health care landscape.

Conclusion: The findings of this study showed that the triple FDC of Dapa + Sita + Met XR provides better glycemic control while maintaining similar tolerability and safety outcomes in patients with T2DM with poor glycemic control. In light of the findings, combining dapagliflozin, sitagliptin and metformin XR may represent a promising therapeutic option for managing T2DM, particularly for patients requiring treatment intensification.

ABS0012

Effectiveness of Lifestyle Interventions in Reducing Metabolic Syndrome Prevalence in Women of Suburban West Bengal, India

Authors – Dr Sandeep Suri, Dr Partha Sarathi Datta

Background: Metabolic syndrome (MetS) is an emerging health problem, particularly in developing countries like India, and is associated with cardiovascular diseases and type 2 diabetes. Lifestyle modifications, such as diet, physical activity, and stress management, are crucial in the prevention and management of MetS. This study explores the prevention of MetS in women aged 31-40 years from suburban areas of West Bengal through lifestyle modifications.

Methods: A longitudinal study was conducted on 462 women aged 31-40 years, living in suburban West Bengal, from June 2023 to June 2024. The participants were divided into two groups: one followed lifestyle modifications (dietary changes, increased physical activity, and stress management techniques) and the other followed their usual habits. MetS was diagnosed using the National Cholesterol Education Program-Adult Treatment Panel III criteria. Data on lifestyle habits, dietary intake, physical activity levels, and stress were gathered through surveys and clinical assessments at baseline, with follow-up after 12 months.

Results: After 12 months, the prevalence of MetS was significantly lower in the lifestyle modification group, which showed a decrease of 22% from 38% to 16% compared to an increase of 30% in the prevalence of MetS in the control group, from 40% to 52%. The lifestyle modification group showed a significant reduction in waist circumference (mean reduction of 5.2 cm, $p < 0.001$), systolic blood pressure (mean reduction of 8.4 mmHg, $p < 0.01$), and total cholesterol (mean reduction of 14.5 mg/dL, $p < 0.01$). Furthermore, the lifestyle modification group had improved psychological well-being with a 25% reduction in perceived stress as measured by the PSS-10 stress subscale score: from 25.4 to 16.5, $p < 0.05$. The control group did not have a significant change in the level of stress.

Conclusion: The prevalence of MetS significantly decreased with lifestyle modifications including diet change, increased physical activity, and stress management among women of 31-40 years of age from suburban West Bengal. It therefore, underlines the importance of promoting healthy lifestyle practices for preventing MetS and complications associated with it. Public health initiatives need to emphasize such lifestyle modifications in order to combat the growing burden of MetS.

Keywords: Metabolic syndrome, lifestyle modifications, PSS-10, women, West Bengal

ABS0013

Eleusine Coracana Diet Prevents Oxidative Damage in Liver and Kidney and Improves Biochemical Parameters in Type 2 Diabetic Rats

Authors – Dr Mandeep Chauhan, Dr Mihir Y Parmar

Objective: In this study, the effects of Eleusine Coracana (Ragi) diet on the oxidative damage from type 2 diabetes mellitus (T2DM) were investigated.

Material and Methods: Formulations containing 25 (EC25), 50 (EC50), and 75% (EC75) of Eleusine Coracana (Ragi) were prepared and included in a 12-week diet of Wistar rats with Streptozotocin-induced type 2 DM. The effects of these formulations in preventing oxidative damage in kidneys and liver homogenates of rats were evaluated using the TBARS assay (lipid peroxidation in liver) and the DNPH assay (protein oxidation in liver and kidneys). Furthermore, the effects of the formulations on the fasting glycemia, fructosamine levels, renal function (creatinine), liver function (enzymes aspartate aminotransferase [AST] and alanine aminotransferase [ALT]), and lipid profile (total cholesterol and fractions) in the serum of rats were evaluated in addition to the evaluation of the centesimal composition and microbiological analysis of the produced Eleusine Coracana (Ragi).

Results: An EC75 diet prevented hyperglycemia in diabetic rats ($p < 0.05$) compared to the diabetic rats fed a standard diet (commercial feed). Notably, the protein oxidation in both the liver and kidneys were prevented in diabetic rats on the EC50 or EC75 diets compared to the control group, whereas the lipid peroxidation was only prevented in the liver ($p < 0.05$). Moreover, all formulations prevented an increase in the amount of triglycerides in the serum of the rats. The EC25 and EC50 diet prevented the increase of cholesterol, and the EC75-based diet of ALT and fructosamine ($p < 0.05$) supported the antihyperglycemic effects and the protection against oxidative damage.

Conclusion: The Eleusine Coracana (Ragi) diet showed great potential for preventing complications associated with diabetes.

Keyword: Diabetes mellitus, Eleusine Coracana (Ragi), oxidative damage

ABS0014

Emphysematous Cystitis in A Patient with Type 2 Diabetes Mellitus

Authors – Dr Pranav Sharma, Dr Anil Samaria Dr Monika Choudhary

Introduction: Emphysematous cystitis is an uncommon condition characterized by presence of air within the bladder wall and lumen.

Diabetes mellitus, dysuria and neurogenic bladder are incriminated as major factors in the appearance of emphysematous cystitis, this clinical entity shows predominance in the elderly women.

Radiological imaging plays an important role in diagnosis and accurate assessment of the severity of this condition. Patient might have varied presentations ranging from incidental diagnosis on abdominal imaging to severe sepsis. Gas forming infections or emphysematous conditions of the urinary tract are potentially life threatening and require prompt evaluation.

Methodology

Patient Profile

A 53-year-old male who was a known case of diabetes mellitus type 2 for last 20 years, presented with fever, lower abdominal pain, burning micturition, frothing in urine, with reduced urine output for 15 days. His past history included hypertension for 20 years, diabetic foot ulcer 10 years back for which incision and drainage was done. In spite of intensive insulin therapy and OHA his hyperglycemia was poorly controlled.

On per examination there is tenderness in hypogastrium region and on percussion presence of tympanic note on suprapubic region. On respiratory examination bilateral air entry is equally present. On cardiovascular system (CVS) examination normal heart sounds are heard and central nervous system (CNS) examinations were within normal limits, there was presence of diabetic neuropathy.

Laboratory investigations showed Hb 11.5 gm/dL, leukocyte counts 18,710. Serum creatinine was 1.4 mg/dL, and urea 48 mg/dL. Provisional diagnosis of urosepsis was made and urine was sent for routine microscopy and culture.

The patient had abdominal and pelvis ultrasound performed which revealed thickening of bladder wall. The KUB X-ray revealed gas in bladder region. Computerized tomography (CT) of abdomen and pelvis revealed gas in the bladder wall and lumen along with thickening of bladder wall. Hence the diagnosis of emphysematous cystitis was made on the basis of history, laboratory and radiological parameters.

Results: The patient was started on intravenous antibiotics and fluid therapy. For strict sugar control regular insulin was given. Urine culture revealed *E. coli.* The patient became afebrile after 48 hour and was discharged advising culture directed oral antibiotic.

Discussion: Emphysematous cystitis is a relatively rare infection, characterized by gas accumulation within the bladder wall and the bladder lumen. It is seen in middle-aged or elderly diabetic patients; other risk factors are history of chronic UTIs, presence of indwelling catheters, obstructive uropathy, neurogenic bladder, and immunosuppression. Emphysematous cystitis occurs in diabetics because of uncontrolled sugar, diabetic nephropathy, bladder dysfunction from diabetic neuropathy, renal artery stenosis, and impaired leukocyte function.

The most commonly isolated pathogens from the urine of EC patients are *E. coli,* K. pneumoniae, and Enterobacter. Most patients with symptoms have abdominal pain, hematuria, and pneumaturia. Other possible symptoms are fever, dysuria, urgency, and frequency. Irrespective of presenting symptom. Plain abdominal X-rays usually show rim(s) of gas lucency in the bladder wall and/or lumen. A CT scan is more sensitive and shows severity, extent and differentiates EC from other conditions.

Radiography remains a cornerstone of positive diagnosis of emphysematous cystitis. The abdomen on radiograph shows a radiotransparent ring on the pelvis area, a pneumobladder and a hydroaeric pelvic level.

Treatment is based on three fundamental therapeutic principles: (1) drainage of the bladder using a transurethral probe or by suprapubic drain which removes the infected urine and gas; (2) taking samples and culturing the urine allows the institution of broad-spectrum antibiotic treatment, which will be adapted by the data obtained. Initially the antibiotic therapy will be managed parenterally then replaced by oral medication to consolidate treatment. Occasionally, the hemocultures isolate the same germ whose sensitivity to antibiotics must be tested.

Conclusion: Emphysematous cystitis is a relatively rare infection, characterized by gas accumulation within the bladder wall and the bladder lumen.

ABS0015

Gastroparesis in a Patient with Diabetic Ketoacidosis in a First Time Diagnosed Diabetes Mellitus Type 1

Authors – Dr Nisarg Modi, Dr Umeshchandra Gediya

Introduction: Diabetes mellitus (DM) refer to a group of common metabolic disorder that share the phenotype of hyperglycemia. Type 1 DM develops as a result of autoimmunity against the insulin producing beta cells, resulting in insulin deficiency. Diabetic ketoacidosis (DKA) is the most frequent endocrine emergency. Here a case of DKA complicated with acute gastric dilation is presented which is one of the rare DKA associated complications. Diabetic gastroparesis is thought to result from impaired neural control of gastric function. Gastroparesis is usually chronic but can present acutely with acute severe hyperglycemia.

Case Presentation: The 20-year-old female presented an emergency department, CU Shah Medical College, Surendranagar with active complaints of difficulty in breathing, generalized weakness, atypical chest pain, perspiration. She also complained about abdominal pain. Patient was also suffering from Amenorrhea since 12 months. Abdominal pain was severe, generalized in location. Abdomen was tense, tender, distended. Kussmaul respiration and a fruity odor on a patient breath was present. Patient also had a severe vomiting which was projectile, nonbloody bilious on nature. Patient was conscious and oriented to time, place and person. She did not have irregular or bad habbits. She did not passed stool since 1 day. In laboratory tests, complete blood count test shows raised total WBC count, C-reactive protein was 56. Random blood sugar was 574 mg/dL. Urine sugar shows +3 urine Acetone +4 and urine pus cell occassional. Serum acetone was 20. Serum amylase 25.90 and serum lipase 51.65. HbA1c was 17%. Urine culture shows no organism. Her blood gas analysis shows: pH - 6.98, pCO2 - 8.1 mmHg, pO2 - 169 mmHg, HCO3 - 1.9 mmol/L, Anion gap 28.3 mmol/L, SO2 98.8% RA. X-ray abdomen standing (AP) shows evidence of air fluid levels in abdomen suggesting picture of obstruction.

Discussion: Acute gastroparesis can occur after an acute elevation in the plasma glucose concentration, which can affect gastric sensory and motor function via relaxation of the proximal stomach, decrease in antral pressure waves, and increase in pyloric pressure waves. Patient with DKA can present with symptoms similar to those of gastroparesis, including nausea, vomiting and abdominal pain. But acute gastroparesis can coexist with DKA, and the gastroparesis can go undiagnosed, since imaging studies are not routinely done for DKA unless there is another reason. The diagnosis usually requires a high level of suspicion in patients with nausea, vomiting, fullness, abdominal pain, and bloating exclusion of gastric outlet obstruction by a mass or antral stenosis; and evidence of delayed gastric emptying. In our patient, gastroparesis was diagnosed on the basis of the clinical symptoms and radiological evidence. Our patient was managed with insulin infusion along with IV fluids and bicarbonate infusion. She was treated with higher antibiotics, with better glycemic control, dietary modification, prokinetics METOCLOPRAMIDE, LEVOSULPIRIDE keeping patient on nil by mouth, correction of electrolytes. The following days, her symptoms had significantly improved, her abdomen was less distended, her bowel sounds had returned and her plasma glucose levels were in normal, she was given liquids by mouth.

Conclusion: DKA symptoms can mask acute gastroparesis, as imaging studies are not routinely done. Gastroparesis is usually chronic but can present acutely with acute severe hyperglycemia. Gastrointestinal motor function is affected by plasma glucose levels and can change over brief intervals. In a patient having gastroparesis, prevent hypokalemia for that keep serum potassium level at around 4.0 mmol/L and keep patient in euglycemic state. Acute gastroparesis caused by DKA can resolve prompty with tight control of plasma glucose levels, anion gap closing and nasogastric tube placement. Careful assessment of abdominal pain should not be overlook during the management of patient with DKA.

ABS0016

Heritability of Blood Glucose Levels: Insights from Adults with a Familial History of Diabetes in West Bengal

Authors – Dr Partha Sarathi Datta, Dr Rajesh K Gautam

Background: Diabetes is a major public health problem in India that has been influenced by the combined effect of genetic predispositions and environmental influences. Estimation of heritability of fasting blood glucose concentrations would provide critical insights into the genetic factors behind the risk of diabetes. The study was conducted to estimate the heritability of fasting blood glucose concentrations among adults with a family history of diabetes in West Bengal, India.

Methods: A cross-sectional study was conducted on 1,243 adults aged 21-60 years, comprising 603 females and 640 males, from various districts of West Bengal. The participants were categorized into groups based on the family history of diabetes, including those with no diabetic parents, one diabetic parent, or both diabetic parents. The fasting blood glucose levels were measured, and the heritability of glucose concentrations was estimated through statistical modeling.

Results: The average fasting blood glucose level was 104.7 mg/dL (SD = 28.9). In males, it was 106.5 mg/dL (SD = 27.5), while females had an average of 102.8 mg/dL (SD = 30.2). Participants whose parent did not have diabetes had a mean glucose level of 98.3 mg/dL (SD = 24.2). Those whose parent had diabetes had higher mean levels; paternal diabetes averaged 106.4 mg/dL (SD = 27.8), and maternal diabetes averaged 109.2 mg/dL (SD = 29.1). The greatest was among subjects whose parents were diabetic with a mean of 118.7 mg/dL (SD = 31.4). Heritability

estimates revealed that the additive genetic effect explained 48% of the fasting blood glucose variation (h^2 = 0.48, 95% CI: 0.45-0.52, p <0.001). Age explained 21% (p <0.001) of the variation, and gender accounted for 7% (p = 0.032). Females had greater heritability estimates than males.

Conclusion: Genetic factors play a significant role in the determination of fasting blood glucose, and familial history of diabetes is considered to be one of the most powerful predictors. Thus, diabetic parents, particularly both, are at the highest risk, with an increased level of glucose, which calls for more specific intervention. Therefore, the results have underlined the genetic factors involved in the risk management of diabetes mellitus.

Keywords: Heritability, diabetes, familial history, adults, West Bengal

ABS0017

Lifestyle Intervention for Reversing Prediabetes and MAFLD in a Young Adult

Authors – Dr Swati Goel, Dr Firdous Shaikh

Background: The increasing prevalence of prediabetes in young adults is concerning. This case explores the role of lifestyle intervention and Cognitive Behavior Therapy in reversing insulin resistance, and metabolic dysfunction-associated fatty liver disease (MAFLD).

Case Presentation: First consultation: 22-year-old male presented with fatigue and weight gain (10 kg in a year). His lifestyle included frequent fast food intake, sugary beverages, smoking 8-10/day. Sedentary work (Jeweller). No other major past medical, surgical history. No known drug or food allergy. No significant family history.

Physical Examination: BMI 27.1 kg/m², waist circumference 98 cm, hip circumference 70 cm. Temperature normal, BP 134/88 mmHg, Pulse Rate 88/minn. SpO2: 98%. No other abnormalities. Clinical signs: Acanthosis nigricans ++ on the neck and axilla.

Laboratory and Imaging Investigations

- BSF: 118 mg/dL
- HbA1c: 6.0 %
- Fasting insulin: 18.9 µU/mL
- S. creatinine: 0.98
- TSH: 1.98
- CBC: Normal
- HOMA-IR: 5.8 (elevated)
- Lipid profile: TG 180 mg/dL, HDL 30 mg/dL, LDL 130 mg/dL TC 200 mg/dL
- LFT: SGPT 46 IU/L, SGOT 39 IU/L, Albumin: 4.1
- FIB-4 score: 0.75 (low-risk for advanced fibrosis)
- USG abdomen: Grade 2 hepatomegaly
- Psychological Factors: Patient reported moderate stress due to work pressure. He scored 20 on the Perceived Stress Scale, indicating moderate stress levels.

Treatment: Low-glycemic, high-fiber diet with a focus on whole grains, lean protein, and omega-3-rich foods. Stopped beverages, advised portion control. Performed 3-4 times weekly, high-intensity exercises along low-intensity recovery. Yoga 2 times weekly for 30 minutes, focusing on stress-relieving asanas. Smoking cessation, initiated nicotine replacement 2 mg chewing gum. Cognitive Behavioral Therapy was advised and followed.

Follow-up: 4 months

- BMI: 24.1 kg/m²
- HbA1c: 4.9%
- BSF: 80 mg/dL
- LFT: SGOT 28 IU/L, SGPT to 22 IU/L
- Lipid profile: TG 90 mg/dL, HDL 40 mg/dL, LDL 100 mg/dL TC 130 mg/dL
- USG: Regression of hepatic steatosis
- FIB-4 score: 0.65

Conclusion: The incorporation of psychological support alongside lifestyle changes addresses the holistic needs of patients. This approach underscores the importance of early, nonpharmacologic strategies in managing metabolic dysfunction.

ABS0018

Metabolic Syndrome and Its Association with Mental Health Disorders in Indian Adults: A Study from West Bengal

Authors – Dr Sandeep Suri, Dr Partha Sarathi Datta

Background: Metabolic syndrome (MetS) is a cluster of conditions that increases the risk of cardiovascular diseases and emerging evidence suggests that it may also be associated with mental health disorders such as depression, anxiety, and stress. This study investigates the relationship between MetS and mental health outcomes in adults across rural, suburban, and urban areas of West Bengal, India.

Methods: A cross-sectional study was done on 1,103 adults (508 men and 595 women), aged 21-60 years, residing in rural, suburban, and urban areas of West Bengal, between April 2023 and September 2024. MetS was diagnosed using the National Cholesterol Education Program-Adult Treatment Panel III criteria. Mental health was assessed by the Depression Anxiety Stress Scales (DASS-21). Logistic regression models were applied to examine the associations between MetS and mental health disorders, adjusting for confounders such as age, sex, and lifestyle factors.

Results: Overall prevalence of Met S was 24.4%. It was the highest in the suburban regions and lower in the urban and rural areas. Adults with MetS had higher odds for having depression (OR = 2.50; 95% CI: 1.85-3.33, p <0.001), anxiety (OR = 2.35; 95% CI: 1.73-3.20, p <0.001), and stress (OR = 2.12; 95% CI: 1.57-2.87, p <0.001), mainly in the suburbs. All these associations persisted after controlling for confounding factors including diet, exercise, and other socioeconomic factors.

Conclusion: MetS is strongly associated with mental health disorders in Asian Indian adults, especially in suburban regions where it is most prevalent. These findings underscore the necessity for integrated public health interventions that address both metabolic and mental health concerns, particularly in high-risk regions. Further research is needed to elucidate the underlying mechanisms and design targeted interventions to improve both physical and mental health outcomes.

Keywords: Metabolic syndrome, mental health, DASS-21, Asian Indian adults, West Bengal

ABS0019

Noncanonical CDK4 Signaling Rescues Diabetes in a Mouse Model by Promoting β-cell Differentiation

Authors – Dr Zalak D Dave, Dr Mihir Y Parmar

Expanding β-cell mass is a critical goal in the fight against diabetes. cyclin-dependent kinase 4 (CDK4), an extensively characterized cell cycle activator, is required to establish and maintain β-cell differentiation, which can increase β-cell proliferation without negatively impacting β-cell function. CDK4 can promote and maintain CDK4 promotes insulin signalling and FOXO1 degradation in the pancreatic β-cell. Apart from that, it is involved in the major metabolic pathways. β-cell failure in the IRS2-deletion mouse type 2 diabetes model is, in part, due to loss of CDK4 regulator cyclin D2. We set out to determine whether replacement of endogenous CDK4 with the inhibit or resistant mutant CDK4-R24C rescued the loss of β-cell mass in IRS2-deficient mice. Surprisingly, not only β-cell mass but also β-cell dedifferentiation was effectively rescued, despite no improvement in whole body insulin sensitivity. Ex vivo studies in primary islet cells revealed a mechanism in which CDK4 intervened downstream in the insulin signalling pathway to prevent FOXO1-mediated transcriptional repression of critical β-cell transcription factor PDX1. FOXO1 inhibition was not related to E2F1 activity, to FOXO1 phosphorylation, or even to FOXO1 subcellular localization, but rather was related to deacetylation and reduced FOXO1 abundance. Taken together, these results demonstrate a differentiation-promoting activity of the classical cell cycle activator CDK4 and support the concept that β-cell mass can be expanded without compromising function.

Keywords: CDK4, β-cell differentiation, insulin signalling, FOXO1

ABS0020

Panicum Miliaceum Diet Prevents Oxidative Damage in Liver and Kidney and Improves Biochemical Parameters in Type 2 Diabetic Rats

Authors – Dr Hiren Mistry, Dr Mihir Y Parmar

Objective: In this study, the effects of *Panicum Miliaceum* diet on the oxidative damage from type 2 diabetes mellitus (T2DM) were investigated.

Material and Methods: Formulations containing 25 (PM25), 50 (PM50), and 75% (PM75) of *Panicum Miliaceum* were prepared and included in a 12-week diet of Wistar rats with Streptozotocin-induced type 2 DM. The effects of these formulations in preventing oxidative damage in kidneys and liver homogenates of rats were evaluated using the TBARS assay (lipid peroxidation in liver) and the DNPH assay (protein oxidation in liver and kidneys). Furthermore, the effects of the formulations on the fasting glycemia, fructosamine levels, renal function (creatinine), liver function (enzymes aspartate aminotransferase [AST] and alanine aminotransferase [ALT]), and lipid profile (total cholesterol and fractions) in the serum of rats were evaluated in addition to the evaluation of the centesimal composition and microbiological analysis of the produced *Panicum Miliaceum*.

Results: An PM75 diet prevented hyperglycemia in diabetic rats ($p < 0.05$) compared to the diabetic rats fed a standard diet (commercial feed). Notably, the protein oxidation in both the liver and kidneys were prevented in diabetic rats on the PM50 or PM75 diets compared to the control group, whereas the lipid peroxidation was only prevented in the liver ($p < 0.05$). Moreover, all formulations prevented an increase in the amount of triglycerides in the serum of the rats. The PM25 and PM50 diet prevented the increase of cholesterol, and the PM75-based diet of ALT and fructosamine ($p < 0.05$) supported the antihyperglycemic effects and the protection against oxidative damage.

Conclusion: The *Panicum Miliaceum* diet showed great potential for preventing complications associated with diabetes.

Keyword: Diabetes mellitus; *Panicum Miliaceum*, oxidative damage

ABS0021

Postprandial Hypertriglyceridemia - A Vital Indicator

Authors – Dr Monish Goghul T, Dr P Deepa

Introduction: In diabetes mellitus, insulin resistance or deficiency alters key enzymes in lipid metabolism causing dyslipidemia. Prolonged and exaggerated postprandial hypertriglyceridemia has been linked to macrovascular diseases. This study compares fasting and postprandial lipid levels with postprandial glucose in type 2 diabetes mellitus (T2DM).

Objectives

- To compare the fasting and postprandial lipid levels in T2DM patients and in controls.
- To describe the postprandial lipid levels and its correlation with postprandial glucose levels.

Methodology

Study Design: Cross sectional

Study Population:

- 80 age matched controls
- 80 patients with T2DM patients of aged 30-60 years of both gender without any comorbidities of <5 years.

Study Duration: 2 months

Sample Size: 80 for each group

Place of Study: Tertiary care centre

Inclusion Criteria:

- T2DM patients of aged 30-60 years of both gender <5 years on oral hypoglycemic drugs.
- Age matched controls

Exclusion Criteria: Patients with h/o hypertension, renal, hepatic and cardiac disorders, smokers, alcoholics, T1DM patients, gestational diabetes mellitus; family history of dyslipidemia; patients on medication for dyslipidemia, insulin therapy and drugs like steroids.

Material and Methods: The personal details of the participants were obtained. 5 mL of venous blood were collected and the serum was separated. Fasting and postprandial glucose and lipid levels were measured.

Criteria:

Fasting glucose and lipid profile: Blood was drawn after 12 hours.

Postprandial glucose: 2 hours after food and postprandial lipid profile: 3 hours after staple food.

Biochemical Investigations:

- Fasting and postprandial blood glucose, TC, TGL, HDL: Estimated in automated analyzer.

LDL: Calculated using Friedewald's formula.

Funded by ICMR.

Result: According to Levene's test for equality of variance, p value for postprandial HDL, fasting blood sugar and postprandial blood sugar were 0.004p, 0.000p and 0.000p respectively (statistically significant).

Conclusion: As most of us are in postprandial state throughout the day, postprandial lipid profile acts as mandatory screening test. Therapeutic interventions can be made to prevent complication.

ABS0022

Practices and Perceptions of Postprandial Glucose Monitoring Among Indian Clinicians in Managing Type 2 Diabetes Mellitus

Authors – Dr Nanditha Arun, Dr Binayak Sinha, Dr Priyamvada Tyagi, Dr Rahul Baxi, Dr Chhavi Agrawal, Dr Vyankatesh Shivane, Dr Blessy Saju, Dr Rahul Iyer, Dr Amarnath Sugumaran

Background: Postprandial glucose (PPG) is a significant contributor to A1C levels especially in Asian patients with type 2 diabetes mellitus (T2DM) The recent IDF position statement is a testament to the importance of appropriate PPG monitoring.

Objective: This study aimed to explore the practices and perceptions of Indian clinicians regarding PPG monitoring in T2DM patients.

Methods: A cross-sectional survey was conducted among clinicians across India between January 2024 - April 2024. Data were analyzed using descriptive statistics.

Results: A total of 310 clinicians participated in the survey. Majority of participants (72.26%) were of the age 30-50 years, with >80% holding postgraduate or higher degrees in medicine and 62.9% practicing in a private setup. Most clinicians (76.45%) reported that for majority (>50%) of their T2DM patients, lab-based PPG testing was done ≥4 times/year. The most common timepoint for lab-based PPG testing was 2 hours post-meal, recommended by 73.23% and 72.58% clinicians for majority of patients on oral antihyperglycemic agents (OHAs) and on insulins, respectively.

The second most recommended timepoint for lab-based PPG testing was 1.5 hours post-meal according to 20.97% and 21.29% clinicians for patients on OHAs and on insulins, respectively. For post-meal self-monitoring blood glucose (SMBG), the most recommended timepoint was 2 hours post-meal, opined by 68.06% and 69.03% clinicians for most patients on OHAs and on insulins, respectively. The second most recommended timepoint for post-meal SMBG in majority (>50%) of patients was 1.5 hours post-meal, opined by 23.55% and 21.61% clinicians for patients on OHAs and on insulins, respectively.

Conclusion: The study reveals that Indian clinicians consider PPG monitoring a significant parameter for T2DM management. Most clinicians recommend lab-based PPG testing at least 4 times/year, with 2-hour post-meal interval being the preferred timepoint for PPG testing done via lab or SMBG both in patients on OHAs and those on insulins.

Keywords: PPG, SMBG, post-meal, T2DM, survey

ABS0023

Prevalence of Thyroid Dysfunction in Indian Women with T2DM: A Cross-sectional Study from a Tertiary Hospital in Bihar

Author – Dr Jyoti Prakash

Background: Diabetes mellitus (DM) is a prevalent hormonal and metabolic disorder with significant health impacts, including complications affecting blood vessels. The relationship between diabetes and thyroid dysfunction has been acknowledged, with varying prevalence across studies. This study explores the prevalence and spectrum of thyroid dysfunction in Indian women with type 2 diabetes mellitus (T2DM).

Aims and Objectives:

- To study the prevalence of thyroid dysfunction in Indian women with T2DM.
- To understand the spectrum of thyroid dysfunction in this population.

Methods: The study included 100 female T2DM patients from Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, from January 2021 to July 2022. Patients were screened for thyroid dysfunction using thyroid function tests (TFTs) and other relevant biochemical parameters.

Results: 37% of the T2DM patients had thyroid dysfunction. Among these, 22% had hypothyroidism, 12% had subclinical hypothyroidism, and 3% had hyperthyroidism. Hypothyroidism was more prevalent in younger females (<60 years), while subclinical hypothyroidism was more common in elderly females (>60 years). There was no significant correlation between the duration of diabetes and the prevalence of thyroid dysfunction. Patients with thyroid dysfunction exhibited poor glycemic control and higher frequencies of diabetic complications such as retinopathy, nephropathy, and neuropathy. 40% of hypothyroid patients tested positive for thyroid peroxidase (TPO) antibodies, indicating autoimmune thyroiditis.

Conclusion: Thyroid dysfunction is common in Indian women with T2DM, with hypothyroidism being the most prevalent. Regular screening for thyroid dysfunction in diabetic patients is crucial for early detection and management, which can help mitigate complications and improve overall health outcomes.

ABS0024

Diabetes India 2025 Abstract for Poster Presentation

Quantum of Stress Hyperglycemia at the Time of Initial Diagnosis of Tuberculosis

Author – Dr Abhishek Singhai

Background: Tuberculosis (TB) is a disease with a chronic infection and therefore, it is likely that the stress hyperglycemia (SH) in TB persists long enough to cause HbA1c elevation, unlike in various acute infections. So, lots of people actually having stress hyperglycemia are misdiagnosed as diabetes mellitus (DM). Several studies across the world shows more than half of patients with TB and newly diagnosed hyperglycemia achieved normoglycemia after 3 to 6 months of TB treatment.

Objectives: The aim of this study was to understand HbA1c-based glycemic patterns among patients with TB at the initial diagnosis and after 6 months and determine the proportion of individuals with newly diagnosed DM (persistence of hyperglycemia) and those who have SH (resolution of hyperglycemia) among individuals with TB.

Methods: A longitudinal observational study conducted in AIIMS Bhopal diagnostic work up for suspected TB cases included microbiological, pathological, imaging, and biochemical evaluation and glycemic status of selected patients were taken from hospital records. A follow-up was conducted at 6 months to evaluate the outcome of anti-TB drugs therapy and assessment of HbA1c based glycemic control.

Results: We included 150 patients with TB, and based on their initial HbA1c values, 82 (54.6%, 95% CI: 46-62%) had dysglycemia (30% had HbA1c levels above 6.4% and 24.6% had values between 5.9% and 6.4%) and 31 (20.7%, 95% CI: 14-18%) had SH.

Conclusion: Our study suggests that during TB therapy a close follow-up of glycemic status is needed as glucose-lowering therapies need to be de-escalated gradually. This will help to avoid hypoglycemia episodes if glucose-lowering medication is initiated and to treat instances of persistent hypoglycemia more effectively.

ABS0025

Saroglitazar Effectively Reduces Metabolic Parameters in Hypertensive Patients with Diabetic Dyslipidemia – 36 months Follow-up Indian Study

Author – Dr Gaurav Chhaya

Objective: Saroglitazar has been studied multiple times in diabetic dyslipidemia for short duration of therapy even upto 58 weeks in Indian patients. This study is a long-term follow-up and establishing for the first time the 36 months clinical safety and efficacy of Saroglitazar 4 mg once daily in patients with diabetes and hypertriglyceridemia with history of hypertension in a real-world scenario.

Methods: In total 64 diabetic patients with serum TG >150 mg/dL, 4 mg Saroglitazar was prescribed for 36 months. In that group of patients, we identified 50 patients had history of hypertension and were taking antihypertensive medications. Metabolic parameters of patients were considered for final evaluation having both baseline and follow-up values of fasting plasma glucose (FPG), postprandial plasma glucose (PPPG), glycated hemoglobin (HbA1c) and lipid profile along with liver enzymes as well. 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 50 patients' data was analyzed in this observational study with variable comorbidities and all were hypertensive T2DM patients, with high TG (TG >150 mg/dL). At end of 36 months, metabolic parameters like TG, FPG, PPPG, HbA1c, ALT and AST were reduced significantly from baseline (Table 1). Regarding safety analysis, Saroglitazar was to be found safe without having any major/serious adverse events during 36 weeks of study duration. Serum creatinine was not adversely affected during this observational study.

Table 1. Absolute Difference in Glycemic and Liver Enzyme Parameter from Baseline at 12, 24 and 36 Months Follow-up to Evaluate Effect of Saroglitazar 4 mg in Diabetic Dyslipidemia Patients with History of Hypertension

Lab Parameters	**Follow-up**			
FBS (mg/dL)	Baseline	12 months*	24 months*	36 months*
N	50	45	40	34
Mean	178.53	122.59	123.58	127.51
SD	59.63	36.86	42.49	32.84
PPBS (mg/dL)				
N	50.00	46.00	40.00	33.00
Mean	256.42	178.84	180.89	187.11
SD	92.41	51.29	49.46	45.03
HbA1c (%)				
N	50	44	40	33
Mean	8.48	7.30	7.44	7.43
SD	1.76	1.05	1.19	1.02
TG (mg/dL)				
N	50	44	40	33
Mean	194.80	164.77	168.17	160.76
SD	45.58	25.26	33.00	36.82
Serum creatinine (mg/dL)				
N	50	44	40	34
Mean	0.98	0.96	0.89	0.98
SD	0.31	0.24	0.23	0.29

TG: Triglyceride, FPG: Fasting plasma glucose, PPPG: Postprandial plasma glucose, HbA1c: Glycated hemoglobin

Conclusion: High TG is considerably associated with diabetes mellitus and elevated liver enzymes, and utmost it is important to reduce TG when it is more than >200 mg/dL. A 36 months use of Saroglitazar, a dual PPAR receptor agonist which significantly reduces lipid and glycemic parameters along with elevated liver enzymes in Indian diabetic patients with better tolerability as well.

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ABS0026

Sexual and Reproductive Health as an Indicator of Metabolic Syndrome Among Indian Adults of Diverse Geo-climatic Areas

Authors – Dr Partha Sarathi Datta, Dr Rajesh K Gautam

Background: Sexual and reproductive health (SRH) forms an integral part of general well-being and has increasingly been acknowledged to be at risk from metabolic syndrome (MetS), which is a cluster of conditions in the body that enhances cardiovascular diseases. Beyond risk conditions of cardiovascular diseases, MetS has also been known to impact negatively on sexual functions such as libido, sexual arousal, and erectile function in men. The present study analyses the relationship between SRH indicators and MetS among adult males and females from diverse geo-climatic regions of West Bengal, India.

Methods: A cross-sectional study, among 1,035 adults (526 male and 509 female), aged 21-60 years, who were the residents of five geo-climatic regions of West Bengal, namely, hill, plateau, plains, delta, and coastal area, between February 2023 and June 2024. Structured questionnaires were used to collect data regarding sexual and reproductive health, including loss of libido, sexual arousal, sexual impotence in males, and menopause age in females. MetS was defined by the National Cholesterol Education Program-Adult Treatment Panel III criteria. Logistic regression was run to estimate associations between MetS and the SRH indicators with controlling by age, sex, and reported level of physical activity.

Results: The total prevalence of MetS was 34.1%, with the plain region reporting the highest levels of MetS, followed by plateau, delta, coastal, and hill regions. Other secondary sexual characteristics endorsed among men with MetS compared with non-MetS men included a history of ED (OR = 2.89; 95% CI: 1.97-4.23, p <0.001), and low libido (OR = 2.44; 95% CI: 1.65-3.60, p <0.001). In women, the age of menopause was earlier in women with MetS than among their non-MetS counterparts, with a mean difference of 2.1 years, p <0.01, and more arousal sexual dysfunction (OR = 2.78; 95% CI: 1.85-4.16, p <0.001). All associations remained statistically significant after adjustment for confounders.

Conclusion: MetS and impaired sexual and reproductive health among adult males and females in West Bengal are closely related. Early detection and management of MetS could offset the negative impact of MetS on SRH. Future studies would do well to explore the mechanisms whereby these associations occur and through what pathways targeted intervention might enhance both metabolic and sexual health outcomes.

Keywords: Sexual and reproductive health, metabolic syndrome, Asian Indian adults

ABS0027

Study of Coronary Risk Factors in Type 2 Diabetes Male Patients Having Erectile Dysfunction

Author – Dr Sambhu Dutta

Background: As per WHO 80 million people will be diabetic in India by 2030. India for a long-time has sported the title of 'Diabetes Capital of the World', but because of the embarrassment that would arise due to the true levels of erectile dysfunction (ED), a lot of ED cases are not recorded and subsequently diagnosed having cardiovascular disease. ED is a well known fore runner/clinical marker of CVD.

Aim: ED is a common disorder of aging male and about 50% of the ED sufferers are type 2 diabetic men in India. As ED is strongly correlated with cardiovascular diseases, we explored how many patients with ED aged 40 to 69 years will develop cardiovascular disease in our location and, rationalize if and which preventive measures are available to reduce cardiovascular risks in this population.

Method: 79 type 2 adult male patients were included and were comprehensively evaluated. All patients underwent ED screening by international index of erectile function questionnaire and focused physical examination for ED. Framingham risk functions were used to determine the 4 to 12 year coronary heart disease risk. The results were extrapolated to the Indian adult male population.

Results: In the age group 40 to 49 years and no significant difference was detected in coronary heart disease (CHD) risk between patients with and without ED. In the age group 50 to 59 years patients with diagnosed ED showed a significantly increased risk to develop coronary heart disease.

Discussion: Screening on cardiovascular risk factors and taking preventive measures is recommended in diabetic men with ED. Diabetic men having ED aged 50 to 59 years are especially prone to develop coronary artery disease and therefore should be aggressively investigated and manged in terms of life style modification as well as pharmacy intervention.

Conclusion: Aggressive management of above risk factors will not only improve ED but also prevent development of more serious complications such as CHD and stroke.

- Framingham Risk Assessment Scale should include ED as a potential risk factor (for male) and all ED patients should be aggressively searched for underlying CHD.
- Use of PDE5 inhibitor may be cardioprotective in diabetics with ED.

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ABS0028

To Study Risk Factors and Biochemical Profile of Diabetic Ketoacidosis Patients with Special Emphasis on Serum Amylase

Authors – Dr Umesh Pratap Singh, Dr Keshav Singh, Dr Dhiraj Soni

Background: Diabetes mellitus (DM) is a complex endocrinological disorder with altered metabolism of blood glucose. Diabetic ketoacidosis (DKA) is one of the life-threatening acute complications of DM that mainly occurs in type 1 diabetes patients, as well as in some patients with type 2 diabetes. The mortality rate associated with DKA depends on the experience of the treating hospital in dealing with this condition; thus, it is critical that patients detect DKA and get medical help as soon as possible. Aim of this study, risk factors, clinical, biochemical profile, serum amylase level and severity of DKA patients.

Methods: A cross-sectional analytical study was carried out in 100 DKA patients in Department of Medicine, SGMH Rewa, Madhya Pradesh from Jan 2021 to June 2022. The data extracted included clinical presentation, precipitating factors, laboratory profile, complications and hospitalization outcomes.

Results: Of the 100 patients admitted for DKA; 70 had type 2 diabetes (70%) and 30 (30%) were type 1 diabetes. Average age at the time of presentation was 47.20 ± 20.48 years. The commonest precipitating factor was infection (38%) followed by other factors (62%). The most common clinical features at the time of presentation were vomiting, fever, altered sensorium and foci of infection. The values for RBS, HCO3, and pH were 525.0 ± 62.4, 12.6 ± 2.69 and 7.14 ± 0.31 respectively. There was no significant difference in clinical and biochemical profile of patients with type 1 and type 2 diabetes. Mortality rate was 3% and factors found to be significant predictors were comorbid condition, severity of mental status, severity of dehydration, RBS at the time of presentation, severe acidosis, and doses and duration of insulin therapy required to clear UKB.

Conclusion: Most common precipitating factors are infection and omission of insulin or irregular treatment. Most common clinical features at the time of presentation are vomiting, abdominal pain, dehydration, acidotic breathing and tachycardia. There is no significant difference in the clinical and biochemical profile of patients with type 1 and type 2 diabetes. Mortality rate in DKA is 3% and the most notable predictors of poor prognosis are; severity of altered sensorium, severity of comorbid condition, severe dehydration, severe acidosis and doses and duration of insulin required for clearing UKB. Identification and treatment of precipitating factors are more important. Patient education plays a crucial role in prevention of DKA.

Keywords: Clinical and biochemical profile, diabetic ketoacedosis, mortality and morbidity

ABS0029

Vitamin D and Diabetes

Author – Dr Manish Agarwal

Vitamin D has emerged as a critical nutrient with potential implications in the pathogenesis and management of diabetes. Its role extends beyond calcium and bone metabolism to encompass regulatory effects on glucose homeostasis, immune modulation, and inflammation. Diabetes mellitus, a metabolic disorder characterized by chronic hyperglycemia, exists primarily in two forms: type 1 diabetes (T1D), an autoimmune condition, and type 2 diabetes (T2D), driven by insulin resistance and β-cell dysfunction.

Vitamin D influences glucose metabolism through various mechanisms. It promotes insulin secretion by binding to the vitamin D receptor (VDR) expressed in pancreatic β-cells, enhancing calcium influx, and upregulating insulin gene expression. Furthermore, it improves insulin sensitivity in peripheral tissues by modulating inflammation, reducing free fatty acid levels, and enhancing the expression of insulin receptor genes. Low serum 25-hydroxyvitamin D [25(OH)D] levels have been associated with an increased risk of both T1D and T2D. Epidemiological studies suggest that vitamin D deficiency may predispose individuals to impaired glucose tolerance, insulin resistance, and β-cell dysfunction.

In T1D vitamin D exerts immunomodulatory effects by downregulating proinflammatory cytokines and promoting regulatory T-cell activity, potentially reducing autoimmune destruction of β-cells. In T2D vitamin D reduces chronic inflammation, a key driver of insulin resistance, and mitigates oxidative stress in metabolic tissues.

Despite compelling evidence from observational studies, results from interventional trials have been inconsistent. While some studies demonstrate that vitamin D supplementation improves glycemic control, reduces insulin resistance, and delays diabetes onset, others report negligible benefits. Variability in study design, population characteristics, baseline vitamin D levels, and supplementation protocols may account for these discrepancies.

Further research is needed to establish optimal serum 25(OH)D thresholds, identify at-risk populations, and determine effective dosages and durations of supplementation. Genetic factors, such as polymorphisms in VDR and vitamin D-binding protein genes, may also influence individual responses.

In conclusion, while vitamin D holds promise as a modifiable factor in diabetes prevention and management, its therapeutic potential requires clarification through rigorous, large-scale clinical trials. Understanding the nuanced relationship between vitamin D status and diabetes could inform future strategies to mitigate the global burden of this metabolic disorder.

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ABS0030

Wolfram Syndrome Unmasked: Decoding The Path to Hope

Author – Dr Gokul Saravanan

Background: Wolfram syndrome is a rare autosomal recessive disorder caused by mutations in wolfram syndrome-1 (WFS1), a gene implicated in endoplasmic reticulum and mitochondrial function. Its prevalence is 1/7,00,000 cases. It is characterized by insulin dependent diabetes mellitus, optic atrophy, diabetes insipidus, deafness and various central nervous system abnormalities. This case report seeks to raise awareness of this rare form of diabetes so that individuals with wolfram syndrome are identified and provided with appropriate care.

Case Presentation: A 17-year-old male patient, a known case of type 1 diabetes mellitus diagnosed at 4 years of age with past history of bilateral cataract surgery 6 years earlier, now presented with visual impairment. MRI brain with contrast revealed bilateral diffuse optic atrophy. Visual evoked potential showed severe anterior visual pathway defect. History also revealed hard of hearing in the past for which ENT evaluation was done which showed bilateral moderate sensorineural hearing loss. Also, he had diabetes insipidus. Biallelic mutations in WFS1 were identified, supporting a diagnosis of Classical Wolfram Syndrome.

Conclusion: This study emphasize the need for careful evaluation of patients with type 1 diabetes mellitus and optic atrophy. Wolfram syndrome manifests as a complex disorder, affecting various systems in the body. Thus, multidisciplinary care from different specialities with careful clinical monitoring and supportive care can help relieve the suffering of patients and improve their quality of life. Also, genetic testing of family members is strongly recommended. Recent advances in the genetics and pathophysiology of the disease have led to promising new therapeutic considerations that may slow progressive neurological decline.

ABS0031

A Case of Morbilliform Drug Eruption with Sulfonylurea

Authors – Dr Aswin Mukundan, Dr Priyanka Kashyap

Introduction: Type 2 diabetes mellitus (T2DM) is the most prevalent among all types of diabetes amounting to more than 96%. The anti-diabetic drugs can induce Cutaneous Allergic Drug Reactions (CADRs) ranging in severity from mild erythema to Steven-Johnson Syndrome.

Case Presentation: 56-year-old woman presented with recent onset erythematous pruritic lesions mainly on the chest and abdomen, increasing in severity. History reveals recent initiation of a combination of sulfonylurea and metformin 2 weeks prior to the onset of symptoms. She was on metformin alone for diabetes treatment for last 5 years since the diagnosis. All other possible pathologies are ruled out. All oral drugs were stopped, and premix insulin twice daily initiated and emollients to apply locally is given. The lesions healed in 5-7 days and the skin became normal in 2-3 weeks' time.

Discussion: The morbilliform drug eruption is one of the commonest forms of drug eruptions, mostly associated with antibiotics, nonsteroidal anti-inflammatory drugs (NSAIDs), antiepileptic drugs etc. It usually appears on the trunk first as itchy macule or papule along with annular, urticaria like or targetoid morphology. Routine tests are not required for the diagnosis. Predisposing factors include history of previous drug eruptions, viral infections or immune deficiency state and multiple medications. Treatment consists of withdrawal of offending drug, application of emollients and wet wraps. Antihistamines are generally not helpful.

Conclusion: CADRs are not uncommon with OHAs. Morbilliform drug eruption is the commonest CADR. Identifying the offending drug and withdrawal of it is the most important part of treatment. A detailed history looking into the recently initiated medications are of utmost importance while diagnosing skin conditions found in diabetes.

ABS0032

A Randomized, Open-Label, Single-Centre Comparative Study to Evaluate the Efficacy of Dente91 DB Toothpaste on Salivary Glucose and pH in Type 2 Diabetic Patients

Author – Dr Harsh Shah

Background: Diabetes Mellitus is a chronic condition associated with oral health complications such as gum disease, dry mouth, and altered salivary composition. Salivary glucose and pH are critical indicators of oral health in diabetic patients.

Objective: Current study was planned to assess and compare the effectiveness of Dente91 DB toothpaste compared to conventional toothpaste (Colgate Total) on salivary glucose and pH in Indian patients with type 2 diabetes mellitus.

Methods: This was a randomized, open-label, single-center, active-control, parallel-group clinical trial. Adult patients with established type 2 diabetes mellitus (HbA1c >8%) on treatment for ≥3 months were randomized to twice daily brushing with either Dente91 DB toothpaste or conventional toothpaste (Colgate Total) for 8 weeks. The primary endpoints were to assess the change in salivary glucose level and salivary pH from baseline to the end of 8 weeks.

Result: Of 54 patients screened, 50 patients were enrolled in the study (25 in each group). At the end of 8 weeks, the mean change in salivary glucose level was significantly better in the Dente91 DB toothpaste group compared to conventional toothpaste group (-3.20 ± 1.90 mg/dL vs -0.60 ± 1.76 mg/dL; p <0.0001). The mean change in salivary pH did not differ significantly between Dente91 DB toothpaste and conventional toothpaste (0.32 ± 0.34 vs 0.17 ± 0.23; p = 0.09). Saliva flow rate was significantly improved with Dente91 DB toothpaste (0.07 ± 0.03 mL/min vs 0.03 ± 0.03 mL/min; p <0.0001); while the mean change in gingival index, plaque index, and dental hypersensitivity was not statistically different between two groups.

Conclusion: Dente91 DB toothpaste significantly improves salivary glucose and pH levels, offering an effective oral care solution for type 2 diabetic patients.

ABS0033

A Rare Case of Congenitally Corrected Transposition of Great Vessels (CC-TGA)

Author – Dr Shukla Ruchi Hemant

Background: A 40 year female presented to tertiary care hospital with breathlessness on exertion, dry cough and generalized edema since 5 days. She had similar complaints since 3 months. Not associated with cyanosis, chest pain, palpitations, fever. Patient was diagnosed as bronchial asthma since 15 years and was taking medications for same. Patient had no past history of any other major illness. No cyanosis, clubbing, bilateral pedal edema present.

Objective: To study various consequences of congenitally corrected TGA.

Methods: This is a case study describing a rare case of congenitally corrected TGA in a 40 year female.

Results: All routine investigations Like CBC, LFT, RFT and electrolytes, serum proteins, cardiac enzymes were normal.

ECG: Atrial flutter with fibrillation.

Chest X-ray: Left heart border straightening with mild cardiomegaly.

Diagnosis was made after expert 2D ECHO: LVEF: 60%. Visceroatrial situs solitus, aorta is left and anterior to pulmonary artery, IVC, SVC-RA-LV-PA. 3 PVC-LA-RV-AORTA. No evidence of shunt or coarctation.

Holter Monitoring: Isoarrythmic AV dissociation, occasional VPCs.

Final diagnosis was: Congenitally corrected transposition of great vessels.

Management: Patient was explained about her diagnosis and treatment was given with diuretics, bronchodilators and inhalation therapy.

Conclusion: Many congenital anomalies are diagnosed in adulthood. Congenitally corrected transposition of great vessels is rare form of congenital heart disease with <1% incidence. CC-TGA is characterized by atrioventricular and ventriculoarterial discordance. Rhythm abnormalities commonly observed are atrioventricular block and supraventricular tachycardia. This patient was advised medical management. Patient presented to outpatient department after 15 days with signs and symptoms resolved. Regular follow-up and possibility of further complications explained.

ABS0034

A Retrospective Study of Comparison Between Incidence of Diabetic Retinopathy in Urban and Semi-urban Clinics Using AI-powered Screening Tools

Author – Dr Ninad Gor

Introduction: Diabetic retinopathy (DR) is one of the major microvascular complications of diabetes mellitus (DM) and a leading cause of visual impairment and preventable blindness as disease progresses. Chronic hyperglycemia which causes retinal vessel microangiopathy, retinal hypoxia, hemorrhages leading to neovascularization, retinal detachment and macular edema in later stages. Increased duration of DM, poor glycemic control, ASCVD, lifestyle factors with associated comorbidities are the major contributing factors. DR is usually detected on routine screening and then classified as NPDR, PDR, and DME and treated based on presence of neovascularization, retinal thickening and disease severity.

Routine screening for early detection using conventional methods, as AI is revolutionizing DR management this study aimed to compare incidence in urban and semi-urban settings, identify health care disparity and promote equitable health care.

Methods: A retrospective study was conducted with data of 50 patients (25 from urban and 25 from semi-urban population). All diabetic retinopathy cases were newly detected during this study period through fundus examination with the help of REMIDIO AI software. Clinical variables such as duration of diabetes, HbA1c, comorbidities were taken into consideration and analyzed. Incidence and prevalence rates were calculated between urban and semi-urban populations.

Results

Urban data: Incidence and prevalence were both 24% (6 out of 25 patients).

Semi-urban data: Incidence and prevalence were both 40% (10 out of 25 patients).

Patients with detected DR also had significantly longer disease duration, elevated RBS and HbA1c values and a higher prevalence of comorbities such as hypertension, dyslipidemia, diabetic nephropathy, IHD, chronic pancreatitis.

Conclusion: This study reveals a higher burden of DR in semi-urban population compared to urban, attributed to pooer glycemic control, longer duration of diabetes and presence of comorbidities. The findings highlight the need in managing diabetes-related complications – levaraging AI driven diagnostic tools and predictive analytics for early detection, risk stratification and targeted interventions. By prioritizing accessibility, AI could play a pivotal role in semiurban settings where health care disparities persist.

Keywords: Diabetic retinopathy, artificial intelligence, urban vs. semi-urban clinics, retinal screening.

ABS0035

A Study of Association Between Serum Uric Acid Levels and Diabetic Peripheral Neuropathy

Author – Dr Abhisekh Raha

Background and Aims: Diabetic neuropathy is one of the most prevalent and dreadful complications of diabetes mellitus, with high rates of morbidity and mortality and causing a significant financial drain on the community. One of the most important elements in the development of diabetic peripheral neuropathy is oxidative stress. It is postulated that uric acid can act as a pro-oxidant aiding the process of microvascular injury. Hence, the study aimed to investigate the association between serum uric acid levels and diabetic peripheral neuropathy in patients with type 2 diabetes.

Material and Methods: In this case-control study, a total of 100 subjects from Lumding Divisional Railway Hospital were included. Among the 100 subjects, cases were 50 diabetic neuropathy patients and control included 50 diabetics without neuropathy. Diabetic neuropathy was assessed utilizing diabetic neuropathy symptom score and diagnosed by vibration perception threshold (VPT) or nerve conduction study in certain cases. Further serum uric acid levels were measured. Data were described in terms of range; mean ± standard deviation (± SD).

Results: The average age of subjects among those with neuropathy was 56.7 ± 9.88 years, whereas the average of subjects in those without neuropathy was 50.1 ± 10.85 years. The average HbA1C was 9.55 ± 2.35 in those with diabetic neuropathy and 8.64 ± 2.16 in those without diabetic neuropathy. The mean serum uric acid level was higher in those with neuropathy (5.75 ± 1.43 mg/dL) compared to those without neuropathy (4.41 ± 1.04 mg/dL).

Conclusion: The study showed higher uric acid levels in patients with diabetic peripheral neuropathy. Elevated serum uric acid levels may be considered as a risk factor for diabetic peripheral neuropathy in clinical practice. Future studies are warranted to study this relationship.

ABS0036

A Study of Prevalence of Thyroid Dysfunction in Patients with Type 2 Diabetes Mellitus

Authors – Dr Akash Verma, Dr Surendra K Kanwat, Dr Abha Gupta

Introduction: Thyroid disorders are very common in the general population and it is second only to diabetes as the most common condition to affect the endocrine system. In this study we try to observe the prevalence of type of thyroid dysfunction in patients with T2DM.

Objectives: To study of prevalence of thyroid disorders in patients with type 2 diabetes mellitus.

Method: The study was conducted on patients attending the medicine/endocrinology outpatient department (OPD) and those admitted to the medicine/endocrine ward at LLRM Medical College, Meerut. A total of 100 participants were selected and included in the study. The study population consisted of 54 males and 46 females, and thyroid function tests were used to classify thyroid dysfunction.

Result: The present study shows 63 (63%) were found to be euthyroid, while 37 (37%) had some form of thyroid dysfunction. Out of the 37 patients found to have thyroid dysfunction, 30 (30%) were found to have subclinical hypothyroidism, 5 (5%) had overt hypothyroidism, 2 (2%) had overt hyperthyroidism.

Conclusion: The study shows high prevalence of thyroid dysfunction among patients with T2DM and its association with poor glycemic control. The study also shows the prevalence of Anti-TPO among patients and its significant correlation with thyroid dysfunction.

ABS0037

A Study to Assess the Prehospital Delay in Patients Diagnosed with Acute Myocardial Infarction in a Tertiary Care Centre, Chennai

Authors – Dr Muthukumarasamy T, Dr Monish Goghul T, Dr K Kannan

Introduction: Acute myocardial infarction (AMI) has major risk factors such as smoking, diabetes, and hypertension. Delayed hospital presentation is often due to procrastination, misinterpretation, misdiagnosis, lack of knowledge, transportation, financial constraints, and underestimating the severity of symptoms.

Fibrinolytic therapy is most effective when administered within 2 hours, significantly reducing mortality in high-risk patients. Timely management is challenging, with prehospital delay being the key factor. Delays can stem from:

- Time taken to decide to seek medical help.
- Time from decision to hospital arrival.

Aim: To assess the prehospital delay in patients diagnosed with AMI presenting to tertiary care centre, Chennai.

Objectives:

- To elicit the average time delay for the patients who developed AMI directly presenting to the tertiary care centre.
- To investigate the causes of prehospital delay and its associated factors for the patients under study.

Methodology:

Study Design: Cross-sectional study.

Study Population: Patients who are diagnosed with AMI (according to the criteria given by 4th universal definition of myocardial infarction (MI) admitted in cardiology department.

Place of Study: Tertiary care centre, Chennai.

Sample Size:

$n = (z\alpha)^2pq/d^2$

n = 101; with the non-respondent rate of 10%, sample size rounded off to 112.

Results: Based on the binary logistics and *chi*-square test analysis of the data collected from our validated questionnaires, we found that awareness of MI is statistically low among the study participants. Other statistically significant factors contributing to prehospital delays in AMI include participants with comorbidities, those who smoke, and individuals who do not directly access tertiary health care centers.

Conclusion: A doctor's most powerful tool is not just medicine but the knowledge they share with patients. Educating patients about their health could prevent nearly 68% of prehospital delays, as observed in our study. Additionally, implementing various government reforms is essential to minimize prehospital delays, enabling faster intervention and improved prognosis for AMI.

"THE BEST CURE BEGINS WITH UNDERSTANDING - EDUCATE TO HEAL"

ABS0038

An Observational Study to Assess Correlation of HBA1C with CT Coronary Angiography Finding

Authors – Dr Sanjay Kumar Saini, Dr Sandeep Tak

Introduction: Diabetes has emerged as a leading cause of coronary heart disease. Coronary artery disease (CAD) is the major cause of morbidity, mortality, and medical cost of diabetes. In people with diabetes, higher levels of HbA1c are associated with increased risk of macrovascular and microvascular complications.

Aims and Objectives: To compare HbA1C with computed tomography coronary angiography (CTCAG) finding in patients admitted with chest pain in Department of Medicine, Dr SN Medical college.

Methodology: Hospital based study done in Department of Medicine SN Medical College Jodhpur on 131 cases (Male = 65) (Female = 66) of chest pain divided according to HbA1c range and CTCAG finding. all patients were assessed by clinical evaluation and investigations. CTCAG done by using Philips 64 slice single source helical CT scanner machine.

Results: In the present study, 131 patients were taken, of which 54 were diabetic and 77 were nondiabetic. The groups are divided according HbA1c range and compared with CTCAG finding (Normal/Abnormal). Proportion of patients having abnormal CTCAG increased with increasing value of HbA1C. The data obtained was analyzed by *Chi*-square test and found to be statistically significant. It suggests that the prevalence of CAD can be correlated with the HbA1c.

Conclusion:

- This study demonstrated a significant correlation between glycemic control, as measured by HbA1c, and the severity of CAD assessed by CTCAG.
- The key findings are:
  - Higher HbA1c levels were associated with increased coronary artery calcium scores (CACS) and abnormal CTCAG finding.
  - HbA1c levels ≥6.5% predicted significant CAD (≥50% stenosis) with moderate diagnostic accuracy (AUC = 0.75).

ABS0039

Assessing Framingham Cardiovascular Risk Scores in Subjects with COPD and Their Correlation with Diabetes

Authors – Dr Keshav Singh Solanki, Dr Yogesh Gupta, Dr Jitendra Mahour, Dr Akash Patel

Background: Cardiovascular disease (CVD) is the leading cause of death among individuals with type 2 diabetes mellitus and chronic obstructive pulmonary disease (COPD) which already are hazardous diseases. Hence present study was undertaken to study correlation of COPD and diabetis with 10 years CVD mortality scores.

Objective: To assess the Framingham cardiovascular risk assessment scores in patients with COPD and their correlation with diabetes in patients with COPD.

Material and Methods: This is a hospital-based prospective study of patients with COPD were enrolled (n = 48; age ≥35 years). The Framingham cardiovascular risk scores were calculated for 48 patients with COPD Grade 1 according to GOLD guidelines. The scores were grouped into high-risk (>10%), and low-risk (<10%). The different variables included in the scoring were age, serum total cholesterol, serum high density lipoprotein (HDL) cholesterol, systolic blood pressure, treatment for hypertension, type 2 DM and smoking status.

Results: In the 48 subjects, 31 (64.58%) patients had low-risk of developing CVD in 10 years and 17 (35.41%) had a high-risk of developing CVD in 10 years. The risk of developing CVD was more in males than females (63.5% vs. 12.5%). The risk of developing CVD was more in patients with diabetes with COPD rather than COPD alone. The additional risk factors in the high-risk group were presence of diabetes with more HbA1c tending towards uncontrolled disease and HDL (OR 1.05).

Conclusion: Framingham risk scoring is one of the global risk assessment tools that predict the 10 year risk of developing CVD; in fact, it can be able to predict the occurrence and early detection of CVD. Patients with high scores in the CV risks should be followed up often and treated adequately.

ABS0040

Assessment of Awarness about Hypoglycemia in Type 2 Diabetic Patients in South India - Hypo D Study

Author – Dr Ashwin Karuppan Viswanathan

Background: Hypoglycemia or low blood sugar means a blood glucose reading lower than 70 mg/dL. It is one of the major barriers for achieving glycemic control. Individuals who lack knowledge about hypoglycemic symptoms can result is detrimental effects, making hypoglycemia awareness essential for patient safety.

Methodology: A cross-sectional study was conducted from January to May 2024 at a tertiary care hospital in South India. A sample of 373 type 2 diabetes mellitus (T2DM) patients on oral hypoglycemic agents or insulin therapy were enrolled. Hypoglycemia awareness was evaluated using Clarke's and Gold questionnaires, and associations with clinical and demographic factors were analyzed using *t*-tests, ANOVA, and correlation analysis.

Results: The percentage of participants who were found to be aware of hypoglycemia was 72.1% in Clarke's questionnaire and 31.4% in gold questionnaire with a combined awareness of only 26.1%. When the incidence of hypoglycemia was evaluated 70.2% of the individuals have had

readings less than 70 mg/dL in the past month with symptoms. Factors like duration of diabetes, family history of diabetes and adjunct insulin therapy were found to significantly affect the hypoglycemia awareness score. Patients with longer duration of diabetes (one-way ANOVA (F (3,369) = 12.784 P = 0.000), patients who have a family history of T2DM (*t* (371) = -2.759, P value = 0.006), patients with higher educational qualifications and patients who were on adjunct insulin therapy were more aware of hypoglycemia and its symptoms than the rest of the cohort.

Conclusion: In conclusion our study revealed a lack of hypoglycemia awareness among T2DM patients. These findings stress the need for a more comprehensive patient education which includes all types of diabetic patients ensuring that they are equipped with proper knowledge and skills to recognize and manage hypoglycemic events.

ABS0041

Association of Neutrophil to Lymphocyte Ratio with Early Stages of Renal Dysfunction Among Type 2 Diabetic Patients

Author – Dr Geetika Gupta

Background: Type 2 diabetes mellitus is a prevalent chronic condition associated with a range of complications, one of the most significant being diabetic nephropathy (DN). It is a leading cause of kidney failure, and its early detection is crucial for delaying disease progression. Since chronic inflammation is a key player in the development of diabetic complications, neutrophil-to-lymphocyte ratio (NLR) may serve as a useful cost effective biomarker of early renal dysfunction in type 2 diabetic patients.

Objective: To determine whether elevated NLR levels are associated with early markers of renal dysfunction. To assess the predictive value of NLR in identifying early-stage diabetic nephropathy in type 2 diabetic patients.

Methods: 126 patients of T2DM satisfying the inclusion criteria were included in the study after taking informed consent. A prestructured questionnaire was used for data collection. Subjects were divided into two groups based on presence and absence of albuminuria. Fasting blood sugar, HbA1c, NLR, blood urea, S. creatinine, urinary albumin excretion, albumin creatinine ratio and eGFR were noted to assess renal functions. Pat with UAE ratio >20 mg/L, ACR >30 mg/g, eGFR <60 mL/min/1.73 m^2 are considered to have early stages of DN.

Results: Totally 126 diagnosed type 2 diabetes patients were registered in our study. 66 had DN and 60 had normal urine albumin. Mean NLR for patients without albuminuria is 1.96 +/- 0.54 and for DN group is 3.06 +/- 0.98 which was highly significant (P < 0.00l). Also strong positive correlation was seen between NLR and markers of renal dysfunction (r = 0.42, p = 0.001).

Conclusion: A significant correlation was found between NLR and poor renal functions in T2DM patients. Hence NLR may be considered as a surrogate marker of DN in early stages, enabling timely intervention strategies to mitigate the progression of renal dysfunction.

ABS0042

Diabetes in Sepsis: Implications for Critical Care Management

Author – Dr Promise Jain

Background: Sepsis is a life-threatening condition with high ICU mortality, influenced by comorbidities like diabetes mellitus (DM). This study investigates the impact of DM on sepsis outcomes in ICU patients, focusing on mortality, length of stay, and complications.

Methods: A retrospective cohort study included 996 ICU patients with sepsis. Patients were categorized into DM (n = 502) and non-DM (n = 494) groups. Outcomes were assessed using multivariate logistic regression models, Kaplan-Meier survival analysis, and subgroup analyses based on HbA1c levels (<7%, 7-9%, >9%) and DM type. Primary outcomes included mortality, while secondary outcomes examined ICU length of stay, mechanical ventilation days, vasopressor use, and secondary infections.

Results: DM was significantly associated with higher mortality (adjusted OR 1.35, 95% CI 1.05-1.75, p <0.01), longer ICU stays (10 ± 5 vs. 8 ± 4 days, p <0.01), and increased secondary infections (40% vs. 32%, p = 0.02). Poor glycemic control (HbA1c >9%) was linked to the worst outcomes, including 35% mortality. Type 1 diabetes patients had longer ICU stays (11 ± 4 vs. 9 ± 5 days, p = 0.02) and more frequent secondary infections (45% vs. 38%, p = 0.03).

Conclusion: DM significantly worsens sepsis outcomes, particularly in cases of poor glycemic control and type 1 diabetes. Targeted glycemic management strategies are essential for improving ICU outcomes in diabetic sepsis patients.

Keywords: Sepsis, diabetes mellitus, ICU, glycemic control, mortality, secondary infections

ABS0043

Diet Lifestyle Impact on Diabetics vs Nondiabetic Patients

Author – Dr Muzammil Mohammed

Aim: The objective of this study is to assess the influence of dietary and lifestyle factors on individuals with diabetes in comparison to those without the condition. This research specifically aims to explore how eating patterns and lifestyle decisions, such as physical activity and daily habits, impact blood glucose levels, insulin sensitivity, weight control, and overall health results in both populations. Furthermore, it seeks to evaluate the relationship between these elements and the quality of life.

Method: This research employed a comparative cross-sectional design with a total of 200 participants, consisting of 100 individuals diagnosed with diabetes and 100 nondiabetic individuals. Participants were recruited from local clinics and community health organizations. The following methodologies were utilized:

- **Dietary Assessment:** Participants completed a comprehensive 7-day dietary recall, which included an analysis of macronutrient intake (carbohydrates, fats, and proteins) and food frequency questionnaires.
- **Lifestyle Evaluation:** A structured questionnaire was used to evaluate participants' levels of physical activity, smoking behaviors, alcohol intake, and sleep patterns. Physical activity was measured through self-reported hours of moderate to vigorous exercise per week.
- **Biometric Measurements:** Measurements were taken for each participant's body mass index (BMI), waist circumference, blood pressure, and fasting glucose levels. Additionally, HbA1c levels were recorded for diabetic participants to assess long-term blood sugar management.
- **Statistical Analysis:** Comparative analyses were performed using independent sample *t*-tests and *chi*-square tests to identify differences in dietary habits, lifestyle choices, and health outcomes between the two groups. Correlation analyses were also conducted to examine the relationships between diet, exercise, and health outcomes within each group.

Results

Dietary Patterns: Diabetic patients reported a significantly lower carbohydrate intake (average 150 g/day) than their nondiabetic counterparts (average 230 g/day), with a notable emphasis on high-fiber foods. Nonetheless, both groups had a high consumption of saturated fats, with 60% of participants in each group surpassing the recommended daily limits.

Lifestyle Habits: Nondiabetic individuals engaged in more physical activity (mean 180 minutes/week) compared to those with diabetes (mean 120 minutes/week). Diabetic participants indicated a tendency towards more sedentary lifestyles, often due to complications like neuropathy or fatigue.

Biometric Outcomes: Diabetic individuals displayed higher average BMI levels (30.5 kg/m^2) and waist circumference, suggesting central obesity, in contrast to nondiabetic individuals (average BMI 26.0 kg/m^2). Additionally, diabetics had elevated fasting glucose levels (mean 160 mg/dL) and HbA1c levels (mean 8.1%) compared to the nondiabetic group, whose fasting glucose averaged 90 mg/dL.

Correlation Findings: A strong positive correlation was observed between high carbohydrate consumption and elevated HbA1c levels in diabetic patients ($r = 0.45$, $p < 0.01$). Conversely, physical activity showed a negative correlation with BMI in both groups, with a more pronounced effect in the nondiabetic group ($r = -0.52$, $p < 0.01$).

Conclusion: The results of this study indicate that while both diabetic and nondiabetic individuals can benefit from maintaining a healthy diet and active lifestyle, those with diabetes need to be particularly vigilant regarding their carbohydrate consumption and levels of physical activity due to the significant relationship between these factors and their health outcomes. Diabetic individuals generally present with higher BMI, fasting glucose, and HbA1c levels compared to nondiabetics highlighting the urgent need for targeted dietary and lifestyle modifications. Future studies should explore the long-term effects of consistent lifestyle changes and tailored dietary plans to enhance health outcomes for individuals with diabetes.

ABS0044

Economic and Clinical Impact of the MyTatva GLIDE-C Program on Lifestyle Modifications and Glycemic Control in T2DM

Authors – Dr Devina Aswal, Dr Banshi Saboo, Dr Mihir Gharia, Dr Jaikishan Agrawal, Dr Bhavan Bhavsar, Dr Himval Pandya, Dr Vrushali Athawale

Background: Type 2 diabetes mellitus (T2DM) presents a significant socioeconomic and health care challenge, requiring a focus on both glycemic control and lifestyle management. Technologies like continuous glucose monitor (CGM) integrated with digital platforms increase patient

awareness by providing real-time glucose tracking. The MyTatva Glycemic Lifestyle Intervention in Diabetes Empowerment-CGM (GLIDE-C) program reflects this approach by providing personalized patient care.

Aim: To evaluate the effectiveness of the MyTatva GLIDE-C program in facilitating lifestyle modifications, improvements in quality of life (QoL), and health economics.

Methodology: This prospective study involved 20 patients with T2DM who were recommended by the physician to be onboarded onto the MyTatva platform. They were given personalized dietary plans, exercise regimens, and cognitive behavioral therapy (CBT) integrated with CGM device. The primary outcomes measured were improvements in lifestyle modification evaluated through reduction in the consumption of Energy-dense, nutrient-poor (EDNP) foods, an increase in nutrient-rich foods (NRF) and QoL parameters such as psychological well-being. Secondary outcomes included HEOR metrics, evaluated through reductions in insulin dosage and hospital visits.

Results: This study demonstrated lifestyle modifications, with 85% of patients reducing EDNP consumption, 81.25% increasing NRF intake, and an average weight reduction of 2%. These changes were reflected in better glycemic control, with HbA1c reduction observed in 75% of participants. QoL is reflected by improvement in mood, motivation, stress management and sleep quality score by 22.7%, 20.8%, 85.2%, and 81.14%, respectively. Insulin doses were reduced in 20% of participants, and the duration between follow-up intervals was extended for 25% of patients who achieved an HbA1c improvement of more than 1%.

Conclusion: The MyTatva GLIDE-C program proved effective in improving glycemic control, dietary habits, and QoL in T2DM patients, empowering sustained self-management. For physicians, it offers a data-driven tool to enhance outcomes and streamline patient care.

ABS0045

Enhancing Metabolic Health in Women with Type 2 Diabetes: The Role of Intermittent Fasting and Lifestyle Intervention

Authors – Dr Diptika Tiwari, Dr Pramod Tripathi, Dr Nidhi Kadam, Dr Baby Sharma, Dr Thejas Kathrikolly, Dr Anagha Vyawahare, Dr Malhar Ganla, Dr Banshi Saboo

Background: Type 2 diabetes (T2D) is a global health issue with a rising prevalence in women, necessitating innovative management strategies to improve metabolic health outcomes.

Objective: To evaluate the added effects of intermittent fasting (IF) on metabolic parameters of women with T2D undergoing a 1 year intensive lifestyle intervention (ILI).

Methods: Data from 1605 women with T2D (>18 years, BMI >23 kg/m^2, not on insulin) who participated in a 1 year ILI program at Freedom from Diabetes Clinic, India, between 2021 and 2023 were analyzed. The intervention included a plant-based diet, physical activity, psychological support, and medical management, with an optional 1 month structured IF. Baseline and postintervention anthropometric parameters, glycemic profiles (HbA1c, fasting blood glucose [FBG]), homeostatic model assessment of insulin resistance (HOMA-IR), and lipid profiles were analyzed.

Results: Among the 1605 participants, 54% practiced IF in addition to dietary interventions. 92.9% and 51.6% were on oral hypoglycemic agents and statins. The median age was 55.0 years, and the median diabetes duration was 9.8 years. Baseline mean values with medications were: weight (71 kg), HbA1c (7.5%), FBG (140.0 mg/dL), HOMA-IR (3.6), total cholesterol (178.0 mg/dL), LDL-C (108.0 mg/dL), HDL-C (45.4 mg/dL), TG (135.0 mg/dL), and TG/HDL ratio (3.6), with no significant differences between the IF and No-IF groups ($p > 0.1$). Postintervention IF participants showed greater improvements compared to no-IF group: mean weight (63 vs. 67 kg), HbA1c (6.6 vs. 7.0%), HOMA-IR (2.1 vs. 2.3), HDL-C (50 vs. 48 mg/dL), TG (130.6 vs. 138.9 mg/dL), and TG/HDL ratio (2.8 vs. 3.1) ($p < 0.05$). FBG, total cholesterol, and LDL-C showed similar improvements in both groups ($p > 0.1$). Significantly higher remission rate was observed in the IF group (33%) compared to no-IF group (23%), $p < 0.05$.

Conclusion: This study showed that intermittent fasting within a lifestyle intervention program can improve metabolic health markers in women with T2D, suggesting its potential as a complementary strategy to traditional diabetes management, warranting further research.

ABS0046

Evaluation of Drug Prescribing Patterns for Metabolic Syndrome Among Patients at a Tertiary Care Centre

Authors – Dr Sanober Sultana, Dr Pravin S Lohar, Dr Sanober Sultana

Introduction: Metabolic syndrome comprises central obesity, dyslipidemia, hypertension, and impaired glucose regulation, increasing the risk of cardiovascular diseases and diabetes. Effective management requires a multidisciplinary approach, with pharmacological therapy playing a critical role. This study evaluates prescribing patterns of drugs for metabolic syndrome in a tertiary care centre.

Objective: To assess the prescribing patterns of drugs for type 2 diabetes mellitus, hypertension, and dyslipidemia in metabolic syndrome patients.

Methods: The study included 100 patients aged 21-70 years, diagnosed with metabolic syndrome per NCEP ATP-III (2005 revision) criteria. Data were collected on prescription details, including drug type, dose, and adherence assessed via a modified Morisky 8-item questionnaire.

Results: Most patients (62%) were aged 41-60 years, and 63% were male. Physical activity was low, with only 9% exercising regularly. BMI analysis showed 40% were in the healthy range (17-24), 30% overweight (25-27), 28% obese (28-40), and 2% severely obese (40-50). Males showed higher weight, waist circumference, cholesterol, blood pressure, and fasting blood sugar, while females had slightly higher HDL levels.

Glycemic control was good in 30%, moderate in 52%, and poor in 18%. Hypertension and diabetes were the most common combinations (65%), followed by hypertension, diabetes, and hypercholesterolemia (25%). Metformin (50%) was the most prescribed antidiabetic drug, Atorvastatin (70%) the leading hypolipidemic, and Amlodipine or Telmisartan (35%) the main antihypertensives.

Conclusion: The study highlights the prevalence of metabolic syndrome in a middle-aged population, with low physical activity and gender-based variations in health profiles. Effective management primarily involved Metformin, Atorvastatin, and Amlodipine or Telmisartan, emphasizing the need for targeted treatment and preventive strategies.

ABS0047

Evaluation of Reversal Potential of pH Specific Fecal Microbiota Microspheres in Diet Induced Type-2 Diabetes

Authors – Dr Devanshi Gajjar, Dr Sriram Seshadri

Rationale: Fecal microbiota transplantation (FMT) has been shown to reverse the diabetic conditions while restoring gut eubiosis. Microsphere formulation ensures targeted delivery of desired dose. The present study emphasises on formulation of fecal microbiota for colonic delivery and further evaluating its reversal potential in diet induced type-2 diabetic animals.

Objectives:

- To formulate fecal microbiota microspheres (FMM) obtained from healthy donors with Eudragit-L-100-55.
- Evaluating the reversal potential of formulated microspheres in diet induced diabetic rodent models.

Methods: Processed fecal microbiota obtained from healthy animals were used to prepare pH specific fecal microbiota microspheres with pH specific polymer Eudragit-L-100-55, using solvent evaporation water-in-oil emulsion technique where span-80 and glutaraldehyde were used as surfactant and cross-linking agent respectively.

Type-2 diabetes was induced in male Wistar rats via high sugar high fat diet and 65% carbohydrate supplementation via oral gavaging (Protocol no.: IS/FAC/35/2023/39).

Following diabetes induction, animals were treated with 200 mg/kg dose of formulated microspheres via oral gavaging and 200 mg/kg metformin as standard treatment respectively, for 12 weeks. Following the completion, animals were euthanized and blood and tissues were collected for further analysis.

Results: FMM were of 0.2812 µm in size with FT-IR peaks similar to crude polymer and formed swellable matrix at pH 6.8 and 7.3. FMM treated group had notable reduction in body weight and serum glucose, triglycerides, cholesterol, SGOT and SGPT, which was similar to metformin treated group. OGTT results showed almost similar trend in glucose tolerance as compared to metformin treated group. Butyrate levels were elevated in FMM treated group than that in metformin, with a decrease in acetate and propionate. Histopathological analysis showed reduction in inflammation in liver, small intestine, and large intestine.

Conclusion: FMM can be used as an individually or as combinational therapy with standard drug for reversal of type-2 diabetes.

ABS0048

Hypoglycemic and Non-hypoglycemic Antidiabetic Drugs - Clinically More Relevant Classification

Author – Dr Rajesh Agrawal

Background: Type 2 diabetes mellitus (T2DM) is one of the most common and challenging condition for the mankind and fraternity and to treat T2DM various antidiabetic drugs (ADD) are available under the heading of traditional ADD classification like sulfonylurea, glinides, insulins, biguanides, glitazones, DPP4 inhibitors, SGLT2 inhibitors, GLP1 RA and so on. While it is most acceptable classification by various organizations but clinical utility of it, specifically for clinicians and general practitioners or primary care physician (PCP) is little cumbersome as the challenges of T2DM management has become increasingly complex because of multiple etiopathology and multiple medications categories and various multidrug combinations.

Rationale: There is dire need to avoid hypoglycemia which may be life threatening to self and others at the same time controlling hyperglycemia is equally important. Here I propose a clinically more relevant classification of ADD, which will be more appropriate.

ADD are classified into two main groups 1/hypoglycemic ADD (HADD) like insulins, sulfonylurea and glinides and 2/non-hypoglycemic ADD (NADD) are drugs except those included in group one.

We are aware of the fact that hypoglycemia is dangerous and may be life threatening for oneself and others in professions like aviation, frontline army man, drivers, various sports like swimming and many other conditions where choosing a NADD will be a public safety issue and prevent many catastrophize

Conclusion:

- While treating diabetes avoiding hypoglycemia is the topmost priority specially in a subset of patients working in sensitive profession like driving, pilot, army, sports, patients with comorbidities like CKD and heart failure.
- 90 percent of the diabetes population is treated by PCP.
- Treatment of T2DM is more cumbersome with the advent of newer and newer drugs with different mechanism of actions and their combinations.
- Our proposed classification is of more clinical utility with simplicity and will help PCP to choose drugs from the two main groups like in milder forms of hyperglycemia NADD and in moderate to severely hyperglycemic people HADD can be chosen.

ABS0049

PEMF Therapy: A Potential Therapeutic Approach for Type 2 Diabetes Mellitus Management

Authors – Dr Firdous Shaikh, Dr Tushar J Palekhar, Dr PT Nehaksma Wanjara

Background: Diabetes mellitus type 2 (DM2) represents a critical global health challenge, characterized by progressive metabolic dysfunction. This research explores the potential of pulsed electromagnetic field (PEMF) therapy as an innovative intervention for managing DM2-related metabolic complications.

Objective: The study aimed to investigate the effects of PEMF therapy on blood glucose parameters in a 48-year-old male participant with type 2 diabetes, complemented by a comprehensive narrative literature review.

Methods: A 12-week intervention was conducted using a 15 Hz PEMF therapy impulse with an amplitude of 12. The participant received 72 therapy sessions (30 minutes daily, excluding sundays), accompanied by a structured therapeutic exercise program. Assessments were performed at 4-week intervals, measuring fasting blood glucose (FBS) and HbA1c levels.

Results: The intervention demonstrated significant metabolic improvements:

- Initial FBS: 209 mg/dL
- 4-week FBS: 181 mg/dL
- 8-week FBS: 149 mg/dL
- Final FBS: 119 mg/dL

Similarly, HbA1c levels showed substantial reduction:

- Initial HbA1c: 9.9%
- 4-week HbA1c: 9.8%
- 8-week HbA1c: 7.9%
- Final HbA1c: 6.2%

Mechanism of Action: PEMF therapy potentially influences cellular function by:

- Enhancing capillary formation
- Accelerating nerve regeneration
- Increasing cellular permeability
- Promoting nitric oxide release
- Stimulating mitochondrial energy production

Conclusion: The study suggests PEMF therapy as a promising adjunctive approach for managing type 2 diabetes. The intervention demonstrated significant improvements in blood glucose parameters, potentially offering a noninvasive complementary treatment strategy. Further research is recommended to validate these preliminary findings and explore the broader therapeutic potential of PEMF therapy in diabetes management.

ABS0050

Protective Effects of Berberine Against Diabetes-associated Cognitive Decline in Mice

Authors – Dr Mrinal Gupta, Dr Mohammad Rumman, Dr Babita Singh, Dr Shivani Pandey

Abstract

Diabetes-associated cognitive decline (DACD) is a common central nervous system (CNS)-related consequence of diabetes. The primary clinical manifestation of DACD includes learning and memory impairment. Unfortunately, there is no cure to delay the cognitive symptoms of diabetes. Although berberine (BBR) has shown promising effect in the treating diabetes and cognitive dysfunction, more research is needed to understand the mechanism of its therapeutic effect. For better understanding, we investigated the functions of BBR involved in anti-inflammation, antioxidant and neuroprotection in the hippocampus of diabetic mice. Diabetes was induced in mice using streptozotocin (STZ). BBR was administered for 4 weeks before (pretreatment), and after (posttreatment) STZ. administration. The effect of BBR on cognitive functions in diabetic mice was determined using neurobehavioral test. Moreover, how BBR affected neuroinflammation, oxidative stress, and acetylcholine levels in the hippocampus and BBB permeability were analyzed using standard biochemical assays. Lastly, we evaluated the mRNA expression of neuroprotective genes in the hippocampus to uncover the mechanism of BBR. Treatment with BBR improved cognition in diabetic mice. It significantly reduced the levels of IL-6, iNOS, TNF-α, IL-1β, ROS and MDA and increased the levels of TAC, GSH, SOD and Catalase. Moreover, levels of acetylcholine and BBB permeability were reduced in the diabetic mice which was reversed by BBR treatment and increased the expression of IGF and BDNF in the hippocampus of diabetic mice. Our results suggest that BBR might be a potential therapeutic candidate for the treatment of DACD. Our study might serve as a basis for developing novel drugs for treating DACD.

Keywords: Berberine, oxidative stress, neuroinflammation, diabetes-associated cognitive decline, streptozotocin, neurogenesis.

ABS0051

Psychometric Burden in Indian Type 2 Diabetes Patients: Prevalence and Predictors of Distress, Depression, and Anxiety

Authors – Dr Baby Sharma, Dr Pramod Tripathi, Dr Nidhi Kadam, Dr Diptika Tiwari, Dr Thejas Kathrikolly, Dr Anagha Vyawahare, Dr Malhar Ganla, Dr Banshi Saboo

Background: Although the physical health impacts of type 2 diabetes (T2D) in the Indian population are well documented, the specific psychometric burdens, such as the prevalence and severity of mental health conditions, remain insufficiently explored.

Objective: This study aimed to assess the prevalence and predictors of anxiety, depression, and diabetes distress (DD) in Indian T2D patients.

Methods: This cross-sectional study included patients (≥18 years) enrolled in a 1 year online diabetes management program at the Freedom from Diabetes Clinic, Pune, India, from January to November 2024. Baseline anthropometry, medical history, and biochemical parameters were recorded. Anxiety, depression, and DD symptoms were assessed using the standard questionnaires GAD-7, PHQ-9, and T2-DDAS. Regression analyses identified key predictors of mental health outcomes.

Results: This study included 1,925 patients with T2D (235 with prediabetes) (58% male). The mean age, diabetes duration, and HbA1c were 49.5 ± 9.4 years, 8.5 ± 6.8 years, and 8.1 ± 1.7%, respectively. DD was more prevalent (53.1%) than depression (16%) or anxiety (14.4%). Predictors of DD included male sex, younger age (<45 years), salaried occupation, body mass index (BMI) >23, insulin therapy, comorbid depression or anxiety, HbA1c >7%, and diabetes duration (<5 years) ($p < 0.05$). Depression was associated with age (<55 years), history of anxiety, alcohol use, salaried or self-employed occupation, family history of diabetes, and comorbid anxiety or DD ($p < 0.05$). Anxiety was associated with duration of diabetes (<5 years), comorbid depression, and DD ($p < 0.05$). Self-reported stress before diabetes diagnosis was common for DD and anxiety, whereas a history of depression was a common predictor of all three conditions.

Conclusion: This study highlights the high prevalence of diabetes distress, depression, and anxiety among Indian patients with T2D, with distress being the most common. These findings emphasize the need for integrated diabetes care that addresses both physical and mental health, particularly for individuals at higher risk due to demographic and clinical factors.

Keywords: Diabetes distress, depression, anxiety, type 2 diabetes, mental health, India, predictors

ABS0052

Recurrent Nocturnal Hypoglycemia in Type 2 Diabetes Mellitus Due to Secondary Adrenal Insufficiency

Authors – Dr Firdous Shaikh, Dr NK Singh, Dr Nadia Phirozmand

Background: Nocturnal hypoglycemia in type 2 diabetes mellitus (T2DM) is most often due to excessive medication or dietary factors. However, secondary causes should be considered if the etiology remains unclear. This case illustrates nocturnal hypoglycemia from undiagnosed adrenal insufficiency (AI) and highlights the importance of a complete diagnostic approach and tailoring the treatment to each individual.

Case Presentation: A 68-year-old woman with a 18-year history of T2DM presented with recurrent nocturnal hypoglycemia for 2 weeks, associated with confusion, sweating, and tremors. SMBG done during episodes of hypoglycemia ranged between 60-70 mg/dL. Her medications included insulin degludec (18 units/day), empagliflozin (10 mg/day), and metformin (500 mg twice daily). She reported fatigue, orthostatic dizziness, and unintentional weight loss of 4 kg over 2 months. She had a history of rheumatoid arthritis treated with glucocorticoids for 6 years, stopped abruptly 8 months ago.

Physical Examination: Fatigue, pallor, with orthostatic hypotension (BP: 96/64 mmHg, postural drop of 12 mmHg) and proximal muscle weakness. Skin examination did not show any hyperpigmentation.

Laboratory Investigations:

HbA1c: 7.2%

Serum cortisol at 8 AM: 2.1 μg/dL (low; normal: 6-23 μg/dL)

ACTH: 8.1 pg/mL (low; normal: 7.2-63 pg/mL)

Sodium: 124 mmol/L (low), Potassium: 5.2 mmol/L (high-normal)

C-peptide during hypoglycemia: 0.4 ng/mL (low)

Suppressive insulin levels (0.6 μIU/mL) during hypoglycemia confirmed insulin deficiency.

Treatment: Hydrocortisone 15 mg/day was started, insulin degludec reduced to 10 units/day, empagliflozin stopped, and metformin continued. CGM was not used due to its cost and patient preference.

Conclusion: This case highlights the point that in T2DM, secondary hypoglycemia cannot be overlooked and needs to be investigated. Tailored management, including low-dose insulin, hydrocortisone supplementation, and medication adjustments, contributed to stabilizing the patient's glycemic control and enhancing overall clinical outcomes.

ABS0053

A Study of Clinico-psychological Profile of Geriatric Diabetes Patients Visiting OPD of SVBP Hospital

Authors – Dr Garima Chaudhary, Dr Shweta Sharma, Dr Abha Gupta

Introduction: India's aging population, with 149 million people over 60, necessitates a focus on addressing aging-related issues and providing health care services tailored to this demographic shift. Diabetes and cognitive impairment in the elderly are closely linked. Studies show that cognitive dysfunction increases the risk of developing diabetes, and older adults with hyperglycemia or hypoglycemia are at higher risk for cognitive decline.

Objective: To study clinico-psychological profile of geriatric diabetes population visiting OPD of SVBP hospital.

Method: The study was conducted on patient should attending medicine OPD of SVBP hospital. A total of 50 participants were selected, study population has 28 females and 22 male.

Result: The study shows 32(64%) pt were found to have psychological impairment. Out of 32 patient 12 has depression, 10 insomnia, 6 has cognitive impairment, 4 has dementia.

Conclusion: The study reveals a high prevalence of psychological impairment among geriatric diabetic patients. Additionally, these patients exhibit poor glycemic control, which necessitates complex treatment regimens involving multiple medications. Furthermore, they often have low socioeconomic status, lack caregivers, and are affected by other components of geriatric syndrome. These factors collectively increase the risk of psychological impairment among diabetic geriatric patients.

ABS0054

Fillet Flap of Great Toe as a Wound Cover in Diabetic Wounds

Authors – Dr Shrikant V Bhoyar, Dr Medha Bhoyar

Wound closure for the diabetic foot can be challenging and often involves amputation or reconstruction. There are described surgical techniques of lesser toe fillet flap in the management of a diabetic foot wound. But the using the great toe as fillet flap to cover the complete and large diabetic wound like transmetatarsal amputation (TMA) are very few. Here I am trying to describe few cases where great toe fillet flap is used to cover these wounds. The great toe flap is used when it is unsalvageable great toe because of infection or osteomyelitis of phalangeal bone. By definition fillet flaps are axial pattern flaps that can be used as composite tissue transfer. These flaps are also useful when there is moderate peripheral vascular deficit.

Keywords: Diabetes mellitus, diabetic foot, toe fillet flap, amputation

Introduction: The lateral lesser toe fillet flaps are described in the management of diabetic foot ulcers which require minimal technical complicity and provides a favorable option to cover the soft tissue defect near the toe or to cover exposed metatarsal head. Advantage of fillet flap include absence of donor site morbidity and good durability. When there is osteomyelitis of bones of toe then instead of amputation the thick skin flap is raised keeping the blood supply intact and dissecting close to the bone. The flap can then be sutured to the raw area.

Case Report: This 59 years male K/C of DM, HTN, CKD came from Junagadh with H/O amputation of middle 3 toes with open wound. X-ray foot showed OM of 5th toe phalanx. So, after debridement of the wound the 5th toe flap was raised and applied to the raw area. Rest of the

raw area was given vac dressing. After 5 days 1 mm of matriderm with skin grafting of rest of wound was done. Likewise, many cases are done successfully by me and many other surgeons to cover the wounds.

Very few cases of fillet flap using the great toe was found in literatures.

Here again the great toe flap is used to cover the raw area of TMA. The big toe fillet flap can be used to cover large area of TMA so that healing is faster and prevent further complications like ulceration when SSG graft is used.

Material and Methods

Patients and Methods

Case 1: 52-years male, DM with infection of lateral 4 toes with PVD with infection spreading onto great toe after amputation of lateral 4 toes. WBC 22,000/CRP 225, serum creatinine 1.9.

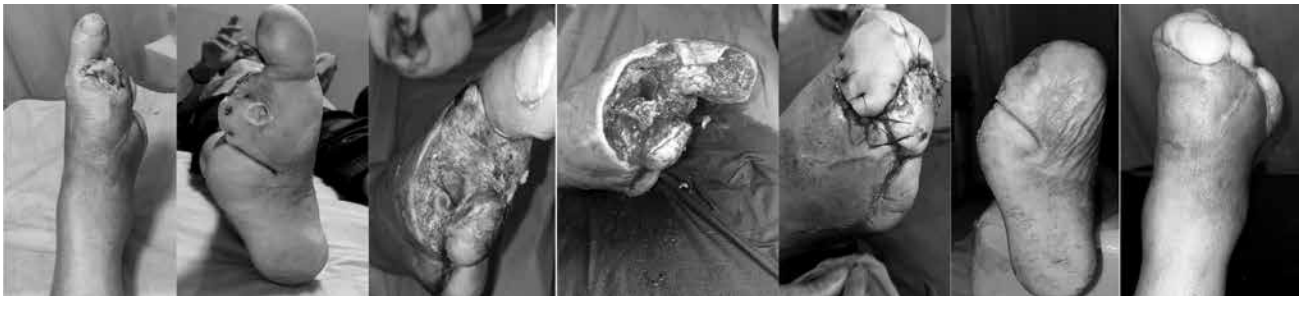
Case 2: 62-years old male was K/C of DM with PVD undergone amputation of lateral 4 toes and presenting with ulceration and infection spreading to Great toe. WBC count of 16,000/dL, CRP 150 with serum creatinine 2.1.

Surgical Technique: After debridement and vacuum-assisted closure (VAC) dressing the wound were prepared for great toe fillet flap.

Under sciatic Femoral block the great toe flap was prepared by dissecting near the bone and removing both the phalangeal bones. The supply to the toe was preserved. The nail with nail bed was removed. You get a sufficient thick skin cover which is adequate to suture on the raw area of TMA. the sutures were removed after 15 days. The wounds healed completely and patient is ready to walk after 3 weeks of surgery.

Case 1

Case 2



Results: In both the cases there was infection and the great toes were unsalvageable. So, the TMA amputation was done and the skin of the great toe was sutured on the raw area after debridement and VAC dressing. Inspite of moderate peripheral vascular insufficiency both the grafts survived and gave good cover to raw area as well as preserve the length of foot.

Conclusion: Whenever possible we tried to save great toe but when the three is necrosis of great toe skin it is advisable to use great toe flap to cover the raw area of amputation or wound in diabetic patients which can heal the wound faster and can give an adequate length of foot to walk preventing further complications.

Suggested Reading

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ABS0055

Impact of Coexisting Hypertension on Cardiac Function in Patients with Type 2 Diabetes Mellitus: An Echocardiographic Study

Author – Dr Aniket Inamdar

Background: Diabetes mellitus and essential hypertension are common conditions that frequently exist together. The coexistence of diabetes and hypertension is known to have a multiplicative effect on adverse clinical outcomes for atherosclerotic cardiovascular disease (ASCVD), heart failure, and microvascular complications.

Aim: This echocardiographic study aimed to look at the impact of hypertension as a comorbidity on cardiac function in patients with type 2 diabetes mellitus (T2DM).

Methods: 200 consecutive diabetic patients were studied. Diabetes mellitus and hypertension were defined in accordance with American Diabetes Association and ACC/AHA guidelines. Baseline 12 lead ECG, blood pressure, HbA1c and 2D echocardiography were done in all patients. statistical analysis was performed using *t*-test, modified *t*-test, Mann Whitney test and ANOVA.

Results: Our echocardiography study showed that diabetic patients with hypertension were found to have more LV size and heart chamber enlargement with p values 0.003 and 0.023 respectively. Diabetic patients with hypertension showed statistically significant evidence of RWMA and diastolic dysfunction on echocardiography with p values 0.002 and 0.042 respectively.

Conclusion: It is well established that hypertension among patients with diabetes hastens the development and progression of macrovascular and microvascular complications due to increasing intracellular hyperglycemia. Hypertension and insulin resistance lead to myocardial fibrosis and ventricular hypertrophy. Framingham study convincingly showed that diabetic patients show additional risk for the development of cardiomyopathy and cardiac insufficiency due to rapid deterioration of systolic and diastolic ventricular function. Numerous studies have shown that antihypertensive therapy reduces ASCVD events, heart failure, and microvascular complications in people with diabetes. Large benefits are seen when multiple risk factors are addressed simultaneously. Adequate treatment of hypertension in patients with diabetes is critical for prevention of end organ damage and limiting the massive socioeconomic burden imposed by these disorders.

ABS0056

Impact of Dapagliflozin on Lipid Profile Improvement in Type 2 Diabetes: A 12-Week Prospective Study

Author – Dr Nirav Goswami

Background: Dyslipidemia is a prevalent comorbidity in type 2 diabetes mellitus (T2DM) that increases the risk of cardiovascular diseases (CVD). Recent evidence suggests that sodium-glucose cotransporter 2 (SGLT-2) inhibitors, particularly dapagliflozin, may not only improve glycemic control but also positively influence lipid profiles, offering potential cardiovascular benefits.

Objective: To evaluate the effect of dapagliflozin on the lipid profiles of T2DM patients over a 12-week period with patients on conventional therapy.

Methods: This prospective study included 50 patients with T2DM, aged 40-65 years. Patients were randomly assigned to two groups: 25 patients received dapagliflozin (10 mg daily), and 25 patients continued on standard therapy (metformin, sulfonylureas, or insulin). Lipid profiles, including

total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), and triglycerides (TG), were measured at baseline and after 12 weeks of treatment. Statistical analysis was performed using paired *t*-tests for within-group comparisons and independent *t*-tests for between-group comparisons.

Results: After 12 weeks of treatment, patients on dapagliflozin showed significant improvements in lipid parameters, with reductions in TC, LDL-C, and TG, alongside a modest increase in HDL-C. In comparison, the control group receiving standard therapy showed minimal changes in lipid levels. The differences in lipid profile improvements between the dapagliflozin and control groups were statistically significant ($p < 0.05$). Additionally, patients in the dapagliflozin group also experienced better glycemic control and weight reduction.

Conclusion: Dapagliflozin treatment significantly improves lipid profiles in T2DM patients, with reductions in TC, LDL-C, and TG, as well as an increase in HDL-C. These findings suggest that dapagliflozin may offer additional cardiovascular benefits beyond its effects on glycemic control, potentially improving lipid metabolism and reducing cardiovascular risk in T2DM patients. Further studies with larger sample sizes and extended durations are needed to confirm these results and better understand the mechanisms underlying these lipid-modifying effects.

ABS0057

Impact of Polypharmacy on Glycemic Control in Diabetes: A Study on Pharmacological Perspective

Author – Dr Deepak Kavhar

Background: Diabetes mellitus (DM) is a chronic metabolic disorder characterized by hyperglycemia due to impaired insulin secretion, insulin resistance, or both. Effective glycemic control is crucial in preventing diabetes-related complications. Polypharmacy, defined as the use of five or more medications, is increasingly common in diabetes management, especially in the presence of comorbidities. While essential for comprehensive care, polypharmacy raises concerns about drug-drug interactions, medication nonadherence, and adverse effects, which may impact glycemic outcomes.

Objective: To evaluate the impact of polypharmacy on glycemic control, medication adherence, and the prevalence of drug-drug interactions among patients with type 2 diabetes mellitus.

Material and Methods: This study included 100 patients with type 2 DM. Patients were categorized into two groups: polypharmacy (≥5 medications) and non-polypharmacy (<5 medications). Glycemic control was assessed using fasting blood glucose (FBG), postprandial blood glucose (PPBG), and glycated hemoglobin (HbA1c). Medication adherence was measured using the Medication Adherence Rating Scale (MARS), and the prevalence of drug-drug interactions and complications was recorded.

Results: Patients in the polypharmacy group exhibited higher FBG (150 ± 20 vs. 140 ± 18 mg/dL, $p = 0.04$), PPBG (200 ± 30 vs. 180 ± 25 mg/dL, $p = 0.01$), and HbA1c (8.5 ± 1.0 vs. 7.8 ± 0.8%, $p = 0.02$). Medication adherence was lower in the polypharmacy group (6.5 ± 1.2 vs. 8.2 ± 0.9, $p = 0.003$), and drug-drug interactions were significantly higher (60% vs. 20%, $p < 0.001$). Complications such as hypoglycemia (20% vs. 10%), hyperglycemia (15% vs. 8%), and cardiovascular events (25% vs. 15%) were more prevalent in the polypharmacy group.

Conclusion: Polypharmacy in type 2 DM patients was associated with poorer glycemic control, reduced medication adherence, and a higher prevalence of drug-drug interactions and complications. Optimizing medication regimens and enhancing adherence strategies are essential to improving outcomes in this population.

ABS0058

Impact of Therapeutic Carbohydrate Restriction on HbA1c and Weight in Type 2 Diabetes: A Comparative Analysis

Author – Dr Deepti Arora

Background: Type 2 diabetes mellitus (T2DM) remains a major global health issue and dietary management plays a crucial role. While standard dietary guidelines emphasize balanced macronutrients, therapeutic carbohydrate restriction (TCR) has emerged as a potential strategy to improve glycemic control. However, there is limited evidence comparing TCR with standard diets, particularly in the Indian population.

Objective: To compare the effects of TCR and a standard diet on HbA1c levels and body weight in T2DM patients over 6 months.

Methods: This retrospective observational study was conducted at a single centre and included 45 individuals with T2DM, divided into TCR ($n = 24$) and SD ($n = 21$) groups. All participants received optimal pharmacotherapy according to baseline HbA1c. Since no hypoglycemia was reported in either group, medication doses remained unchanged. Data on HbA1c and body weight were collected at baseline and after 6 months.

Paired *t*-tests were used for within-group analysis, and independent *t*-tests for between-group comparison. Effect sizes were calculated for the observed differences.

Results:

- **TCR Group:** Significant reductions in HbA1c (-0.68%, p <0.00001) and weight (-2.22 kg, p = 0.00173).
- **Standard Diet Group:** No significant changes in HbA1c (+0.06%, p = 0.7854) or body weight (-0.06 kg, p = 0.21213).
- **Between-Group Comparison:** Significant differences in both HbA1c (t = 4.95, p = 0.000012) and body weight (t = 2.30, p = 0.0265). Large effect sizes were observed for both HbA1c (Cohen's d = 1.51) and body weight (Cohen's d = 0.70) in the TCR group.

Conclusion: TCR significantly improves both glycemic control and weight management in T2DM patients compared to a standard diet. These findings suggest that TCR may be a promising alternative for managing T2DM, particularly in populations struggling with obesity and poor glycemic control. The substantial effect sizes highlight TCR's potential as an impactful dietary strategy. Furthermore, the absence of hypoglycemia indicates that TCR can be safely combined with pharmacotherapy.

ABS0059

Incidence, Outcomes, and Risk Factors of Acute Kidney Injury in Diabetic Patients: A Prospective Observational Study

Author – Dr Nilanjan Mukherjee

Background: Diabetic patients are at an increased risk of developing acute kidney injury (AKI) due to underlying microvascular damage and associated comorbidities. AKI in this population often leads to poor outcomes, including progression to chronic kidney disease (CKD). This study aims to evaluate the incidence and outcomes of AKI in diabetic patients and to identify the factors associated with poor recovery or progression to CKD.

Objective: The primary objective of this study is to assess the incidence of AKI in hospitalized diabetic patients and determine the rate of recovery or progression to CKD. The secondary objective is to identify risk factors that contribute to adverse outcomes in diabetic patients with AKI.

Methods: A prospective observational study was conducted in the General Medicine Department of Aditya Diagnostics and Hospital, Dibrugarh, Assam over a 6 month period. The study included 50 diabetic patients aged 18-80 years who developed AKI during hospitalization. Patients with preexisting CKD or major organ failure were excluded. AKI was diagnosed based on KDIGO criteria using serum creatinine levels and urine output. Data on patient demographics, diabetes duration, comorbidities, and medications were collected. Kidney function was evaluated at baseline, discharge, and 1 month post-discharge to assess recovery or progression to CKD.

Results: Of the 50 patients, 70% (35 patients) developed severe AKI, and 30% (15 patients) had moderate AKI. The overall recovery rate was 60%, with 30 patients regaining normal kidney function. However, 40% (20 patients) had incomplete recovery, and 10% (5 patients) progressed to CKD. Risk factors associated with poor outcomes included advanced age, longer duration of diabetes, hypertension, and the use of nephrotoxic drugs. Severe AKI resulted in a 20% (7 patients) need for dialysis, and prolonged hospital stay was observed in these cases. Mortality was recorded in 5% (2 patients).

Conclusion: AKI in diabetic patients is associated with significant morbidity, including progression to CKD in a substantial proportion of cases. Key risk factors for poor outcomes include older age, hypertension, and the use of nephrotoxic medications. Early recognition and intervention are critical to improving outcomes and preventing the long-term complications of AKI in this high-risk population.

ABS0060

Increasing Use of Unsupervised Home Remedies Causing Significant Hypoglycemia in Rural India: A Case Series (CGM Based)

Authors – Dr Arjun MB, Dr Vidya Ramesh

Introduction: The increasing reliance on unsupervised home remedies for managing health conditions is a growing concern, particularly in rural India.[1] In recent years, the influence of social media, celebrities, and online platforms has further fuelled the popularity of these home treatments, often without consideration of potential side effects.[2] According to research, self-medication with home remedies has been linked to adverse outcomes, including dangerous fluctuations in blood glucose levels.[3]

This case series explores instances where patients in rural India experienced severe hypoglycemia as a result of self-prescribed home remedies, shedding light on the potential dangers of such practices. Through these cases, we aim to highlight the need for better patient education, a balanced approach to treatment, and the integration of both modern medicine and traditional practices under professional guidance.

Case 1: 62-year-old male with type 2 diabetes, on a combination of Metformin 1 g/day, Dapagliflozin 10 mg/day, Sitagliptin 100 mg/day, and Insulin glargine 20 units daily in the night, presented with uncontrolled fasting blood sugars (220 mg/dL) and postprandial glucose levels (186 mg/dL), despite normal kidney function, cholesterol and liver function tests.

He also reported early morning lethargy, which he attributed to his fluctuating blood sugar levels. Upon further inquiry, he revealed that he had recently started drinking karela bitter melon (Fig. 1) juice every night before bed as a home remedy to manage his fasting blood sugar.

Figure 1. Photo of bitter melon used (as sent by the patient).

Figure 2. CGM readings demonstrating prolonged nocturnal hypoglycemia with rebound hyperglycemia.

Figure 3. Stabilized sugar levels by Day 14 after structured dietary intervention.

A continuous glucose monitoring (CGM) study showed severe late-night hypoglycemia followed by rebound hypoglycemia in the morning (Fig. 2). It was concluded that the karela juice was causing nocturnal hypoglycemia, which led to elevated morning glucose levels.

The patient's choice to drink karela juice had to be respected, so his insulin dose was reduced and he was advised to drink half a glass of karela juice in the morning instead of night, following which his blood sugar levels stabilized, as revealed by subsequent CGM monitoring (Fig. 3).

Case 2: A 45-year-old employee with type 2 diabetes, on a combination of Glimepiride (1 mg) and Metformin (500 mg) twice daily, was referred to the medical outpatient department due to daily headaches at work, typically around 12 PM. His blood pressure (BP) was measured to be 176/100 mmHg at first aid center in his office. Upon referral, his hospital BP was 136/86 mmHg, and his random blood glucose (GRBS) was 107 mg/dL.

Further investigation revealed that he had started drinking a mixture of chia seeds, fenugreek seeds, and flax seeds with his breakfast 1 week prior after watching a YouTube video, which suggested that these seeds could help manage diabetes. His HbA1c was 7.1%, kidney function tests, cholesterol levels, urine tests, and fundus examination were all normal.

Given his elevated BP reading at work, he was advised to make lifestyle modifications and instructed to monitor his BP along with his blood sugar levels for 3 consecutive days preferably during the episode of headache. The following day, he returned with a blood sugar level of 56 mg/dL and BP 168/94 measured during a headache episode at his office.

The diagnosis of home remedy-induced hypoglycemia leading to hypertension was made. The patient admitted to modifying the YouTuber recommended flax seed remedy by adding chia and fenugreek seeds in hopes of enhancing its effects. He was referred to a dietitian for guidance on the moderate consumption of flax seeds. His Glimepiride dose was reduced to 0.5 mg once in the morning and once at night, and with these adjustments, his blood sugar and BP normalized, and his headaches subsided within next few days.

Figure 4. Photograph of amla jucie as sent by the patient, of which she consumed approximately 10 glasses per day.

Figure 5. CGM showing intermittent day time hypoglycemia.

Figure 6. Stabilized sugar levels after structured dietary intervention.

Case 3: 28-year-old woman, newly married, anxious to conceive, presented to the emergency department with a history of recurrent syncope and sweating for the past week, as reported by her husband. During the latest episode, her random blood glucose (GRBS) was measured at 48 mg/dL, after which her husband gave her sugar, improving her condition. However, upon arrival her hospital GRBS was 132 mg/dL. She had a body mass index (BMI) of 30.9 (weight: 80 kg, height: 161 cm). The patient was advised admission but refused. She mentioned being previously diagnosed with polycystic ovarian

disease (PCOD) and had an HbA1c of 6.2%, indicating prediabetes. Despite being prescribed Metformin by her gynecologist, she refused to take it, fearing it would affect her marital life. Instead, she started drinking 2 liters of amla Indian gooseberry juice daily (Fig. 4), believing it would help with weight loss, control her blood sugar levels, and regulate her menstrual cycles. She reported losing 8 kg since her marriage and gradually increased her amla juice consumption on her own.

A comprehensive work-up, including fasting insulin, was performed, all of which were normal. However, a CGM study revealed multiple intermittent daytime hypoglycemic episodes (Fig. 5), which were attributed to her excessive amla juice consumption. She was advised to reduce the intake amla juice to 120/mL and after discontinuing its use, her blood sugar levels stabilized within a day, relieving all her symptoms.

Discussion: Our first case underscores the risks of rebound hyperglycemia secondary to home remedy-induced hypoglycemia. CGM was crucial in identifying this pattern, providing real-time glucose data that revealed late-night hypoglycemia and the subsequent rise in morning blood sugars. The patient's choice to drink karela juice was respected, and he was advised to consume it in the morning instead, which can have a significant impact on his mental health by fostering a sense of autonomy and trust in the treatment process.

Our second case highlights the potential for home remedies, particularly when modified or overused, to lead to unintended adverse effects, such as hypoglycemia and its subsequent impact on other health parameters like blood pressure. The onset of headaches, combined with fluctuating blood sugar levels, triggered an increase in his BP readings. The patient's referral to a dietician helped address the unregulated use of seeds, specifically flax seeds, which can have hypoglycemic effects when consumed in large quantities.

Our 3rd case highlights the prevalent belief among rural Indian women that diabetes medications can affect marital life and fertility. Many also view home remedies as harmless, not recognizing potential side effects. Newlywed women, especially those eager to conceive, may take extreme measures to meet societal expectations, often at the cost of their health. This case demonstrates how such practices, like excessive amla juice consumption even in prediabetes without any medications, can lead to significant hypoglycemia emphasizing the need for education and proper medical guidance.

These issues can be addressed through proper patient education, where doctors and patients work synergistically, acknowledging the value of both modern science and traditional home remedies. Denying home remedies outright can negatively impact a patient's mental health, as they may feel doctors are dismissing their beliefs just to sell more medications. A respectful, detailed, and structured approach that recognizes patient boundaries can help integrate effective home remedies into treatment plans, optimizing care while addressing patient concerns.

Conclusion: In conclusion, this study emphasizes the need for a balanced approach that integrates both modern medicine and traditional home remedies in diabetes management. By respecting patients' beliefs and fostering open communication, health care providers should guide them towards safer and more effective treatments. A structured dietary program, along with CGM, can help patients understand the importance and value of each home remedy, enabling them to choose the most beneficial options for managing diabetes.

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ABS0061

Indian Diabetes Risk Score - A Strong Predictor of Diabetes Mellitus: A Cross-sectional Study Among Urban and Rural Population of Lumding

Author – Dr Abhisekh Raha

Background and Aims: The prevalence of diabetes mellitus is growing rapidly worldwide and is reaching epidemic proportions. Globally around 536 million people have diabetes in 2021 and by 2030 this will rise to 643 million and 783 million by 2045 as per IDF. Indian Diabetes Risk Score (IDRS) is a cost-effective and simple method for identifying undiagnosed diabetic subject at community level. The aim of study was to estimate prevalence of diabetes mellitus and to identify high-risk subjects by using Indian diabetes Risk Score for detecting undiagnosed diabetes in urban and rural areas of Lumding.

Material and Methods: It was a community based cross-sectional study done in the urban and rural areas of Lumding in subjects aged 20 years and above from August 2023-July 2024. It was a community based cross-sectional study which was carried out in 1,000 adults aged more than 20 years in urban area rural area of Lumding. Out of these 1,000 adult population, 500 adults from urban and 500 adults from rural areas of Lumding was selected.

Results: 555 (55.5%) of subjects were in moderate risk IDRS category while 320 (32.0%) were in low-risk and only 125 (12.5%) were in high-risk IDRS category. Prevalence of diabetes mellitus was highest in high-risk IDRS category (47.5%) followed by moderate risk (9.2%) and low-risk (2.8%) IDRS category. The sensitivity of IDRS was 81.40% in the present study and a high specificity of 72.0%. Present study also showed a positive predictive value of IDRS as 31.7% and a diagnostic accuracy of 73.3%.

Conclusion: This study provides a use of Indian Diabetes Risk Score for identifying undiagnosed high-risk for patients with diabetes in Indian population. It is essential to implement the simple IDRS tool in the community for mass screening so that proper intervention can be carried out at an early stage to reduce the burden of diabetes.

ABS0062

Diabetes India 2025

Background: India ranks second highest in diabetes prevalence at 16.1%, according to an article published in "Nature" in 2023. 38% households faced catastrophic expenditure and 10% fell below poverty line due to diabetes treatment of family members. The treatment cost is expected to rise further in future, causing immense distress to affected people.

Objective: The objective of this presentation is to review the available data to analyze the lifestyle interventions to manage diabetes without spending huge amount of money in a way to prevent and slow down diabetes progression.

Method: The author searched the MEDLINE literature database through PubMed, specifically looking for articles published after 2010, considering strength of evidence for benefits and downsides of lifestyle interventions based on diet and exercise for managing T2D, and if possible, put the disease into remission. The search mainly aimed at analyzing studies focusing on the South-Asian population.

Results: Faulty diet and physical inactivity seem to be important modifiable behavioral risk factors for rising diabetes incidence. Mechanism of action of changing to healthier alternatives was studied, including specific challenges faced by South-Asian populations. Introduction of participants to yoga, breathing exercise, resistance training, aerobic exercise and dietary guidance recipe demonstration improved disease markers. Exercise improves mitochondrial function, reduces visceral fat, and facilitates GLUT4 translocation to plasma membrane even in absence of insulin signal. Including whole plant-based foods in diet confer benefits such as improved insulin sensitivity, prevention from disease and development of comorbidities.

Conclusion: Lifestyle interventions in the field of diet and exercise are effective in improving disease outcome in patients with diabetes. Barriers of cultural diversity, language are challenges specific to Indian subcontinent. Once these are overcome, adherence to lifestyle advice improves. Incorporating lifestyle medicine interventions in diet and exercise would considerably bring down the treatment cost.

ABS0063

Knowledge of Gestational Diabetes Mellitus Among Pregnant Women in a Tertiary Hospital in Marawi City Lanao Del Sur

Author – Dr Al-jazarie U Masacal

Gestational diabetes mellitus (GDM) is a common pregnancy complication that can have detrimental effects on both the mother and the baby. In the Philippines, addressing GDM is not just about managing pregnancy-related conditions; it's a strategic opportunity for preventing the rising prevalence of diabetes and improving long-term health outcomes for women and their families. Here, we aimed to assess the current level of knowledge regarding GDM among pregnant women in a tertiary hospital in Lanao del Sur. We also aimed to increase the awareness and understanding of GDM, and recognition of the knowledge gap will help develop targeted health education and intervention strategies. After obtaining informed consent from the study subjects, a 15-item tool was used to measure GDM knowledge among pregnant patients aged at least 16 years in a tertiary hospital in Lanao del Sur.

In this current study, the total number of participants was 558, where GDM knowledge was inadequate or poor among more than half of the women, 383 (68.6%), versus good or adequate knowledge status among 175 (31.3%). The mean score for adequate knowledge is 11.1 and SD +/- 1.7, while the mean score for inadequate knowledge is 3.9 +/- SD 2.6. Most participants were university or college graduates (n = 260, 46.6%) and identified themselves as housewives (n = 488, 87.5%). In addition, the majority of the participants have a family working in the medical field (67.90%), have a family history of diabetes (43.50%), and health care providers were quoted as a source of GDM information by 43.5% of the

women. Statistically significant associations were noted between knowledge about GDM and educational status, job type, respondents with family members working in the medical field, and family history of diabetes. Similarly, individuals who have tested their blood sugar before demonstrating higher mean knowledge scores (7.3 ± 4.1) than those who have not (5.3 ± 3.9), showing a significant association

Our findings highlight the necessity of therapeutic education practices for expectant mothers. They must understand how to effectively manage their pregnancy and cultivate the proper mentality and habits for preventing GDM. Last but not least, doctors and other health care professionals require education and orientation because they play a significant role in raising awareness among expectant mothers.

ABS0064

Metformin Meets Modern Dentistry: A Comparative Study on Local Drug Delivery Adjunct with Laser Therapy in Diabetes Associated Periodontitis

Author – Dr Pooja K Shukla

Introduction: Periodontitis, is a chronic multifactorial inflammatory disease associated with progressive destruction of tooth-supporting apparatus, is considered the sixth complication of diabetes.

Traditional treatments like scaling and root planing (SRP) is effective, adjunctive therapies like laser-assisted new attachment procedure (LANAP) and local drug delivery (LDD) offer additional benefits.

LANAP causes a photochemical reaction in the cell known as photobiomodulation which induces tissue repair and wound healing.

Metformin (second-generation biguanide) as LDD, enhances bone formation and stimulates osteoblastic differentiation.

Objective: This study evaluates the clinical efficacy of 1% metformin gel LDD adjunct with LANAP in improving glycemic control, patient-reported outcomes, and periodontal benefits and regeneration in type 2 diabetes patients with periodontitis.

Methods: A comparative study of 15 controlled type 2 diabetes patients with periodontitis, divided into three groups:

- Group A: SRP only
- Group B: SRP + 1% metformin gel LDD
- Group C: SRP + LANAP + 1% metformin gel LDD

Clinical parameters, including simplified oral hygiene index (OHI-S), gingival index (GI), probing pocket depth (PPD), clinical attachment level (CAL), healing index and HbA1c, were assessed at baseline, 1 month and 3 month.

Results: All groups showed mean HbA1c reductions. Groups B and C exhibited greater reductions in PPD and CAL compared to Group A. Group C demonstrated the most significant mean CAL gain and bone depth reduction.

Conclusion: Combining SRP with 1% metformin gel LDD and LANAP significantly enhances periodontal healing, tissue regeneration and glycemic outcomes in type 2 diabetes patients, offering a promising therapeutic approach.

ABS0065

Navigating the Crossroads of Endocrine Emergencies: Unraveling Simultaneous Diabetic Ketoacidosis and Thyroid Storm in Graves Disease

Author – Dr Akanksha Singh

The co-occurrence of diabetic ketoacidosis (DKA) and thyroid storm (TS) is a rare but critical scenario demanding swift recognition and management to avert severe outcomes. This case series highlights instances of simultaneous DKA and TS, emphasizing the diagnostic challenge stemming from their overlapping clinical presentations. The presented cases involve patients with Graves' disease, showcasing the potential of TS to precipitate DKA. Early identification and appropriate intervention for both conditions yielded favorable outcomes. The paper underscores the importance of considering a concurrent TS diagnosis in DKA patients, especially those with a known history of thyroid disorders. The intersection of thyrotoxicosis and DKA, while infrequent, poses significant risks, warranting heightened clinical awareness. The comprehensive management involved addressing DKA and thyrotoxicosis concurrently, resulting in successful patient outcomes. These cases illuminate the intricate interplay between thyroid function and glucose metabolism in emergency settings, urging clinicians to maintain a vigilant approach when faced with the

dual challenge of DKA and TS. The proposed series contributes to the evolving understanding of these endocrine emergencies, emphasizing the need for nuanced diagnostic considerations and timely therapeutic interventions.

Keywords: Endocrine emergencies, diabetic ketoacidosis, thyroid storm, Graves' disease

Introduction: Thyroid disorders and diabetes mellitus (DM) represent two prevalent endocrine conditions frequently encountered in clinical practice, often coinciding within the same individual. While Graves' disease and type 1 DM (T1DM) share an autoimmune origin, the linkage with T2DM remains less understood. The interplay between circulating thyroid hormones and glucose metabolism, coupled with their impact on insulin function, adds complexity to the clinical landscape. Excessive thyroxine (T4) levels can compromise glycemic control, potentially unmasking subclinical diabetes or escalating the risk of hyperglycemic emergencies.[1,2]

Although thyrotoxicosis has been previously identified as a potential precipitant for diabetic ketoacidosis (DKA) in medically treated T1DM guidelines for routine screening in patients without T1DM are lacking. This case series presents instances of severe DKA believed to be induced by overt thyroid storms in previously nondiabetic individuals.[3,4]

The simultaneous manifestation of thyrotoxicosis and DKA is a clinically unusual scenario, posing a diagnostic challenge due to overlapping symptoms. Moreover, the coexistence of DKA, T4 toxicosis, and thyrotoxic cardiomyopathy is exceptionally rare. The complexity of these cases underscores the need for heightened awareness among clinicians to recognize and address this intricate interplay between thyroid and metabolic dysregulation.[5,6]

Thyroid storm, characterized by organ failure resulting from excessive thyroid hormone activity, carries a reported fatality rate of 20-30% if not promptly treated. Meanwhile, DKA, a severe metabolic disorder stemming from insufficient insulin activity, presents its own set of challenges, with a death rate of 2% or less when the condition follows a severe course. This case series sheds light on the even more uncommon scenario where thyroid storm and DKA unfold simultaneously, emphasizing the critical importance of timely recognition and comprehensive management for optimal patient outcomes.

Case Series

Case 1

A 36-year-old male with a history of Graves' disease, previously well-controlled with carbimazole, presented urgently with intractable nausea, vomiting, and abdominal pain. Despite a palpable goiter and signs of severe dehydration, the patient's noncompliance led to a thyroid storm with concomitant DKA. Aggressive management, including intravenous fluids, insulin, and propranolol, successfully resolved both endocrine emergencies, underscoring the challenge of dual hormonal dysregulation.

Case 2

A 44-year-old male, known for T2D managed with glibenclamide, presented with a complex clinical picture. Five days of malaise, fever, and watery diarrhea progressed to severe dehydration and shock. Extensive evaluation revealed a simultaneous occurrence of DKA and thyroid storm. Treatment involved fluid resuscitation, insulin therapy, and addition of methimazole and Lugol's solution. The patient exhibited remarkable recovery, emphasizing the need for a holistic approach in managing coexisting endocrine crises.

Case 3

In a 62-year-old female, initially presenting with nausea and vomiting, a delayed diagnosis revealed an unexpected combination of DKA and thyroid storm. Surprisingly, the patient lacked classical symptoms associated with both conditions, complicating the diagnostic process. Prompt

Parameter	Timing	Case 1	Case 2	Case 3
Venous pH	On admission	6.8	6.9	7.03
	Before discharge	7.5	7.6	7.5
Potassium (mmol/L)	On admission	3.8	3.5	3.9
	Before discharge	3.6	3.5	3.4
Bicarbonate (mmol/L)	On admission	9	11	12
	Before discharge	22	24	24
Sodium (mmol/L)	On admission	120	122	120
	Before discharge	136	134	136

Creatinine (mg/dL)	On admission	1.45	1.88	2.02
	Before discharge	0.73	0.66	0.72
Urine ketone	On admission	+++	+++	+++
	Before discharge	-	-	-

Table. Patient's Laboratory Results on Admission versus Before Discharge

Case	TSH (mIU/L)	Free T4 (pmol/L or ng/dL)	Free T3 (pmol/L or pg/mL)	Total T3 (ng/mL)	TRAb (IU/L)
1	<0.01	54.3	23	-	-
2	-	2.15 (ng/dL)	0.44 (pg/mL)	0.19	-
3	< Detectable limit	>8.78 (ng/dL)	25.27 (pg/mL)	-	23.8

initiation of insulin, methimazole, and propranolol led to successful management and subsequent normalization of thyroid function. This case highlights the importance of considering atypical presentations when dealing with concurrent endocrine disorders.

These cases collectively underscore the intricate nature of managing thyroid disorders and diabetes simultaneously, emphasizing the need for a nuanced clinical approach. The varied presentations and outcomes highlight the challenges in diagnosing and treating these complex endocrine interactions.

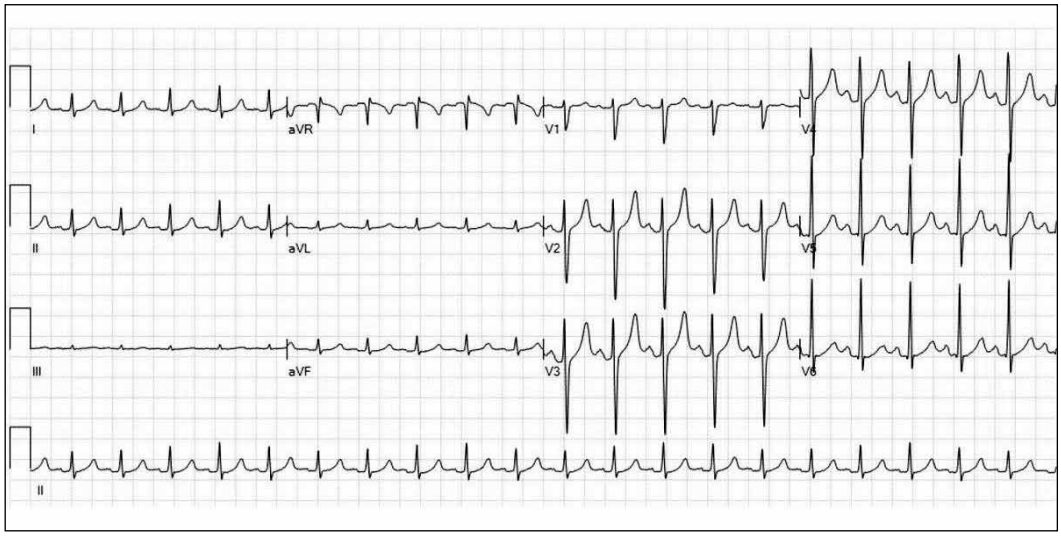

Figure 1. ECG showing sinus tachycardia.

Discussion: DKA and thyroid storm (TS) represent distinct endocrine emergencies with multifaceted manifestations, making their concurrent presentation a rare and diagnostically challenging occurrence. DKA is characterized by severe insulin deficiency, leading to ketonemia, hyperglycemia, and anion gap metabolic acidosis. On the other hand, TS involves multiorgan dysfunction due to excessive thyroid hormone activity, impacting thermoregulatory, cardiovascular, and central nervous systems.[7,8]

The interplay between thyroid hormones and glucose metabolism is intricate. Thyroid hormones induce insulin resistance, elevate glucose production through glycolysis and gluconeogenesis, and enhance gut absorption of glucose. Additionally, thyroxine decreases serum insulin levels, fostering a state of insulinopenia and insulin resistance, resulting in uncontrolled lipolysis and increased ketone production, ultimately leading to hyperglycemia and DKA.[9,10]

Historically, cases of concurrent DKA and TS have been predominantly reported in individuals with preexisting diabetes and thyroid disorders, often attributed to medication nonadherence or under-treatment. However, our case series introduces a unique perspective, highlighting instances where previously well-controlled Graves' disease precipitated new-onset DKA in nondiabetic individuals. The challenge in diagnosing such cases lies in the overlapping clinical features of DKA and TS, including nausea, vomiting, abdominal pain, tachycardia, confusion, and coma. This overlap can mask the underlying thyroid dysfunction or hyperglycemia, emphasizing the need for heightened clinical suspicion.

The management of these complex cases involves early intravenous hydration and insulin administration for DKA, alongside the identification and treatment of precipitating factors. Notably, thyrotoxicosis-induced impaired glucose metabolism is a rare but potentially life-threatening trigger for DKA. Treatment of coexisting thyrotoxicosis typically involves beta-blockers for adrenergic suppression, followed by propylthiouracil (PTU) and iodine solution to inhibit thyroid hormone synthesis and release, respectively. Glucocorticoids, although first-line for TS, are avoided in patients with concurrent DKA due to the risk of exacerbating hyperglycemia and ketosis.[11,12]

Our case series underscores the importance of considering thyrotoxicosis as a potential trigger for DKA, even in the absence of a prior diabetes diagnosis. Timely recognition and comprehensive management based on established protocols, as exemplified in our cases, can lead to favorable outcomes. Furthermore, the discussion sheds light on the complex interplay between thyroid and metabolic disturbances, emphasizing the necessity for a thorough investigation of precipitating factors in cases of DKA, especially those lacking an apparent cause or showing suboptimal response to standard therapy. The recognition of this dual diagnosis is crucial for ensuring appropriate and targeted interventions, ultimately improving patient prognosis.

Conclusion: The coexistence of DKA and TS, even in nondiabetic individuals, challenges traditional perspectives. Our case series emphasizes the potential of thyrotoxicosis as a precipitant for DKA, urging consideration of routine thyrotoxicosis testing in all DKA cases. The rarity of simultaneous DKA and thyroxin toxicosis underscores the diagnostic complexity. Given the clinical overlap and significant consequences of oversight, a simplified guideline is proposed: in DKA, explore thyrotoxicosis, and vice versa. Caution is advised in administering glucocorticoids for TS and DKA, considering the associated risk of exacerbating hyperglycemia and ketosis.

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ABS0066

Prevalance of Phimosis in Diabetic Patients: A Comparative Study

Author – Dr Murari Shetty Jayachander

Introduction: It is well established that diabetes is related to balanitis and therefore phimosis.[1] Phimosis, a condition characterized by the inability to retract the foreskin, is a common complication in diabetic males. Diabetes, particularly when poorly managed, may lead to changes in skin elasticity and immune response increases the risk of developing phimosis due to various factors like high blood sugar and increased susceptibility to infections. The criteria for diagnosing diabetes have changed in recent years, and this might alter the incidence of diabetes in those with acquired phimosis.[2] The relationship between diabetes and phimosis is well-documented, but it remains unclear whether there is a difference in the prevalence of phimosis between newly diagnosed and long-standing diabetic patients could provide insights into the progression of diabetes-related complications.

Aim and Objective: To compare the prevalence and severity of phimosis in newly diagnosed diabetic patients versus long-term diabetic patients.

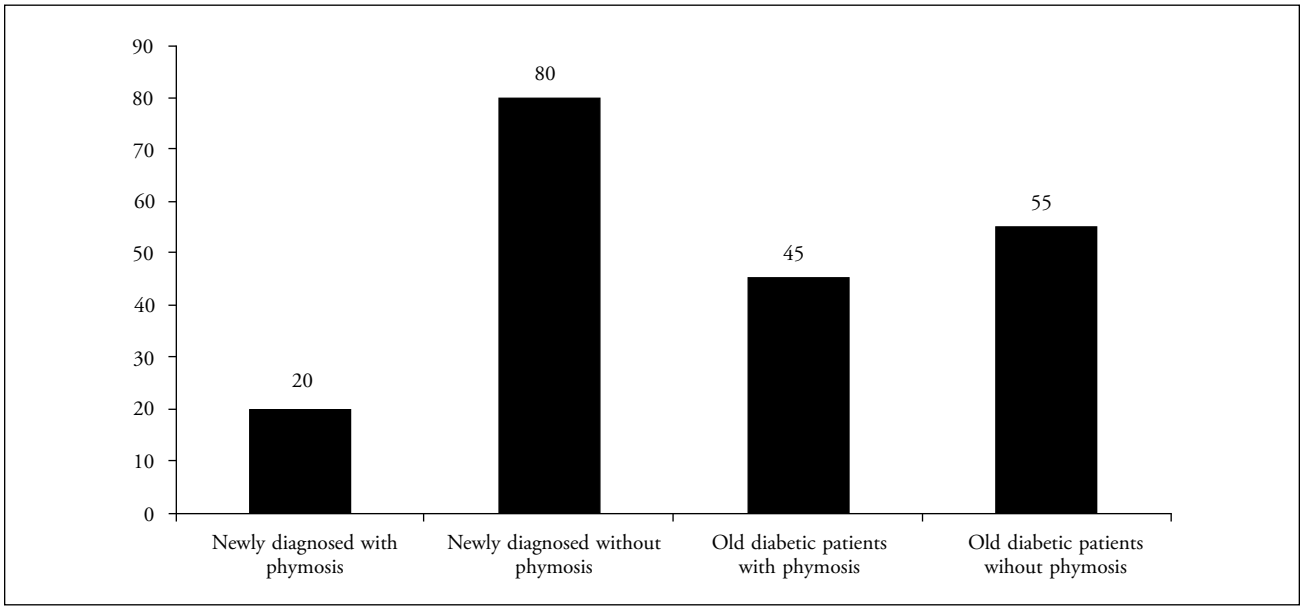
Population Studied: Patients coming to RIMS hospital OPD

Group A: Newly diagnosed diabetic patients (≤1 year)

Group B: Long-term diabetic patients (>5 years)

Methodology: A total of 200 male diabetic patients were recruited, (mean age of 52 years, range 40-68) with 100 being newly diagnosed and 100 having a known history of diabetes (mean age of 58 years, range 45-72). The presence of phimosis was assessed with clinical examination and patient history in both groups. Data on blood glucose levels, HbA1c, urine glucose levels, diabetes duration, and phimosis severity were collected. Fasting plasma glucose values of ≥7.0 mmol/L (126 mg/dL), 2 hour post-load plasma glucose ≥11.1 mmol/L (200 mg/dL), HbA1c ≥6.5% (48 mmol/moL); or a random blood glucose ≥11.1 mmol/L (200 mg/dL. Data were analyzed using a *chi*-square test to determine the significance of any differences between the two groups.

Results: Sample Size: The study included 200 male diabetic patients divided into two groups, newly diagnosed group of 100 patients (average age was 52 years, ranging from 40 to 68 years). Long-standing diabetes group of 100 patients (average age was 58 years, ranging from 45 to 72 years). In newly diagnosed group phimosis is seen in 20% patients and there is no phimosis in 80% patients, long-standing diabetes group phimosis is seen in 45% patients and there is no phimosis in 55% patients. The prevalence of phimosis was higher in the long-standing diabetes group compared to the newly diagnosed group. The average HbA1c level was slightly higher in the long-standing diabetes group (8.2%) compared to the newly diagnosed group (7.5%). There was a positive correlation between poor glycemic control (higher HbA1c levels) and the presence of phimosis, especially in the long-standing diabetes group. The *chi*-square test was used to compare the prevalence rates between the two groups. The *chi*-square value was 4.80, with a p-value of 0.028. Since the p-value was less than 0.05, the difference in the prevalence of phimosis between the two groups was statistically significant.



Conclusion: The results suggest that as the duration of diabetes increases, the likelihood of developing phimosis also increases. Chronic hyperglycemia might contribute to changes in skin elasticity and an impaired immune response, making long-standing diabetic patients more susceptible to complications such as phimosis. The study also highlights that poor glycemic control, as evidenced by higher HbA1c levels, is associated with a greater prevalence of phimosis. Additionally, the correlation between higher BMI and phimosis indicates that obesity might be an independent risk factor, possibly due to its association with poorer glycemic control and skin changes. The study suggests regular screening for phimosis in diabetic patients, particularly those with poor glycemic control or higher BMI, to facilitate early intervention and prevent further complications

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ABS0067

Prevalence of Microalbuminuria in Type 2 Diabetes

Authors – Dr Mukul Tanwar, Dr Manoj K Yadav, Dr TVS Arya

Introduction: The term microalbuminuria is defined by a urinary albumin excretion (UAE) rate higher than normal but lower than 200 μg/min, the lowest detection limit of proteinuria as measured by standard laboratory methods in the absence of urinary tract infection and acute illness including myocardial infarction.

Method: The study was conducted on patients attending medicine OPD/IPD and admitted in Medicine/Endocrine ward at LLRM Medical College, Meerut. A total of 95 participants were selected randomly and included in the study. Patients with overt albuminuria (>350 mg/day), congestive cardiac failure, urinary tract infection, pregnant patients, patients confined to bed for more than 2 weeks, and patients on ACE inhibitors for hypertension were excluded from the study.

Result: In our study involving 95 patients, comprising 45 males and 50 females, the overall prevalence of microalbuminuria was found to be 40%. Among the patients with microalbuminuria, 16 (42%) were males, and 22 (57.9%) were females. Of the 38 patients with microalbuminuria, 10 exhibited mild albuminuria, 16 had moderate albuminuria, and 12 presented with severe albuminuria. The study also revealed that patients with microalbuminuria had a significantly longer mean duration of diabetes (10.39 ± 4.52 years) compared to those without microalbuminuria (5.04 ± 2.26 years).

Discussion: This study demonstrates a significant prevalence of microalbuminuria (40%) in T2DM patients, with a higher occurrence in females (57.9%) compared to males (42%). The stratification into mild, moderate, and severe categories highlights the progressive nature of diabetic nephropathy. Patients with microalbuminuria had a longer mean duration of diabetes (10.39 ± 4.52 years), emphasizing the impact of prolonged hyperglycemia on kidney function. These findings underscore the importance of regular screening and early intervention to prevent progression to severe complications.

Conclusion: Microalbuminuria is prevalent in 40% of T2DM patients, more common in females and associated with longer diabetes duration. Routine screening and early management are essential to reduce the risk of diabetic nephropathy and improve patient outcomes.

ABS0068

Study of Predictive Value of Corrected QT Interval on Electrocardiogram for Diastolic Dysfunction in Patients with Diabetes Mellitus

Author – Dr Aniket Inamdar

Background: Diabetes-related mortality is mainly attributed to its cardiovascular complications. Timely detection and treatment are essential in averting the high mortality associated with cardiovascular complications of diabetes. QT prolongation in the electrocardiogram (ECG) is one of the most commonly seen disorders of the heart.

Aim: We aimed to study of predictive value of corrected QT interval on electrocardiogram for diastolic dysfunction in patients with diabetes mellitus.

Material and Methods: 200 consecutive diabetic patients were studied. Diabetes mellitus was defined in accordance with the ADA definition. Baseline 12 lead ECG was done in all patients. 2D echocardiography with M mode and color doppler were performed by cardiologist in all 200 diabetic patients. Statistical analysis was performed using *t*-test, modified *t*-test and ANOVA.

Results: Patients with QTc ≥440 were found to have statistically significant evidence of diastolic dysfunction (p = 0.000) on echocardiography. Patients with QTc ≥440 also had more evidence of regional wall motion abnormality (p = 0.0490) on echocardiography.

Conclusion: Our study showed that patients with QTc ≥440 on ECG were found to have significant evidence of diastolic dysfunction and RWMA on echocardiography. Patients with diabetes were reported to have a higher prevalence of QTc prolongation. Patients with diabetes have a 2-10 times higher risk of sudden cardiac death than general population. Hyperglycemia and chronic changes in myocardium are the main factors behind the increased prevalence of QTc prolongation in patients with diabetes. In diabetic patients, a prolonged QTc is associated with autonomic neuropathy, ischemic heart disease, ventricular arrhythmias and with increased risk of sudden death. Close monitoring of QTc interval is essential to detect potential cardiac complications in diabetic patients, and medication adjustments may be necessary to mitigate this risk.

ABS0069

Study of Prevalence and Pattern of Dyslipidemia in Type 2 Diabetes Mellitus in Divisional Railway Hospital/Lumding/ NF Railway

Author – Dr Abhisekh Raha

Background and Aims: Dyslipidemia is a modifiable coronary artery disease (CAD) risk factor and its effective management could reduce morbidity and mortality rates, The aim of this study was to determine the prevalence and pattern of dyslipidemia among type 2 diabetes mellitus (T2DMs) patients in Lumding Divisional Railway Hospital. T2DMs of both sex who attended as outpatient, were selected.

Material and Methods: The study includes 200 subjects who visited the general OPD. Persons with known diabetes who were previously diagnosed cases of diabetes whether or not they were using either oral antiglycemic drugs or insulin or both and persons with newly-diagnosed diabetes were those who had their fasting blood glucose level ≥126 mg/dL were included for the study. The patients with renal insufficiency, end stage renal disease, on hypolipidemic drugs, with history of cardiovascular disease (CVD), antioxidant therapy, with urinary tract infection, with acute infectious diseases and pregnant diabetic women were excluded. The fasting blood samples were collected and estimated for glucose, lipid profile using gold standard technique.

Results: Among 200 T2DM patients studied, 100 were male and 100 female. Among males with dyslipidemia, the proportion of patients with mixed dyslipidemia, combined two parameter dyslipidemia and isolated single parameter dyslipidemia were 2.4%, 24%, 61.2% respectively. Among females with dyslipidemia, the proportion of patients with mixed dyslipidemia, combined two parameter dyslipidemia and isolated single parameter dyslipidemia were 1.6%, 24%, 58.8% respectively. In our study the major pattern of dyslipidemia was single parameter dyslipidemia in both sexes with 61.2% in male and 58.8% in female. In single parameter dyslipidemia, high low-density lipoprotein (LDL) cholesterol was observed compared to high triglycerides and low HDL values. In combined two parameters high triglycerides and LDL level with low high-density lipoprotein (HDL) was more common than the other two conditions in both male and female. The mean age of study subjects was 50.72 ± 15.281. The frequency distribution has shown that study subjects of less than 20 years were 1.2%, subjects in 21-40 years of age were 25.2% 41-60 years were 48.4%, 61-80 years were 23.2% and 81-100 years were 2.0%. The major risk factors of T2DMs are hyperglycemia, dyslipidemia and hypertension. Lipid abnormalities may be due to the major metabolic consequence of diabetes mellitus hyperglycemia and insulin resistance. The current study revealed that dyslipidemia are highly prevalent among T2DM patients, which indicated a remarkable association between dyslipidemia and T2DM. This finding is in line with the reports from other Indian population and other countries that patients with diabetes mellitus have a high prevalence of atherosclerosis and coronary artery disease. (CAD) compared to nondiabetic subjects.

Conclusion: The most prevalent pattern among both male and female was high level of LDL, high triglycerides and low level of HDL. The prevalence of dyslipidemia in our Indian population is significantly high, which indicates the urgency of lifestyle intervention strategies to prevent and manage this important health problem and risk factor. Optimal care, routinely monitoring of blood glucose level and lipid profile should be helpful to control this abnormality.

Keywords: Lipid metabolism, pathogenic mechanisms/complications

ABS0070

Unique Triad: Sick Euthyroid Syndrome, Nephrogenic Diabetes Insipidus (NDI), and Hirata Syndrome - A Case Report

Author – Dr SV Limbachiya

Background: Sick euthyroid syndrome (SES) is a transient thyroid dysfunction commonly associated with systemic illness. Nephrogenic diabetes insipidus (NDI) is a rare disorder characterized by the kidney's inability to concentrate urine. Hirata syndrome, a rare autoimmune disorder, is associated with a variety of autoimmune diseases, including thyroid dysfunction. The coexistence of these three conditions is exceptionally rare.

Objective: To report a case of a patient presenting with a unique triad of SES, NDI, and Hirata syndrome, highlighting the diagnostic challenges and therapeutic implications.

Methods: A detailed case report of a 55-year-old female patient presenting with polyuria, polydipsia, and hyponatremia was analyzed. Laboratory investigations, including thyroid function tests, renal function tests, and autoimmune markers, were conducted.

Results: The patient was diagnosed with SES, NDI, and Hirata syndrome based on clinical presentation, laboratory findings, and response to treatment. The patient's symptoms were managed with appropriate hydration, dietary recommendation.

Conclusion: This case report highlights the importance of considering rare combinations of endocrine disorders, even in seemingly straightforward clinical presentations. Early recognition and appropriate management of these conditions are crucial to improve patient outcomes. Further research is needed to elucidate the underlying mechanisms and optimal therapeutic strategies for this unique triad.

ABS0071

To Study the Prevalence of Negative Body Image in Patients with Polycystic Ovary Syndrome; Experience from Central India

Author – Dr Jaideep Khare

Introduction: Polycystic ovary syndrome (PCOS) is not an uncommon endocrine disorder affecting approximately 4-12% of women of reproductive age in India. According to ESHRE/ASRM consensus workshop at Rotterdam in 2003, the diagnosis of PCOS is based on the presence of any two of chronic anovulation, clinical/biochemical parameters for hyperandrogenism, and polycystic ovaries on ultrasonography.[1-3] It can present in various ways like hirsutism, acne, alopecia, anovulatory cycles, infertility and obesity. All these symptoms may lead to negative self-body image. Social media platforms also several times plays important in present times because of its easy availability. Several times unrealistic goals are set based on social media influence which leads to hampered self-body image and distress.

Aim and Objective: To study the prevalence of negative self-body image in patients with PCOS.

Material and Methods:

Study Design: Cross-sectional observational study.

Duration of Study: 12 months.

Inclusion Criteria: All female of reproductive age group diagnosed with PCOS.

Exclusion Criteria:

- Very sick patients
- Patients with diagnosed mental illness
- Pregnant patients
- Not willing to participate in study.

All female with PCOS fulfilling inclusion and exclusion criteria will be asked to fill the questionnaire of Appearance Anxiety Inventory (AAI).[3]

The AAI comprises ten items, with respondents rating each item on a 5-point Likert scale ranging from 0 (not at all) to 4 (all the time). Sum up the responses for all ten items to calculate the total score. The total score will range from 0 to 40.

The interpretation of the score is as follows:

- 0-5: Low levels of appearance anxiety
- 6-15: Moderately high levels of appearance anxiety
- 16-25: High levels of appearance anxiety
- 26-40: Very high levels or extreme levels of appearance anxiety.

Table 1. Comparison of AAI Among Treated and not Treated PCOS Patients

	On treatment (N = 63)	Not on treatment (N = 87)	
Mean age (Years)	27.87 + 8.96	23.28 + 4.95	0.12
Score 0-5	19 (30.16)	17 (19.54)	0.03
Score 6-15	24 (38.10)	33 (37.93)	0.21
Score 16-25	12 (19.05)	19 (21.84)	0.37
Score 26-40	8 (12.69)	18 (20.69)	0.06
Mean score	9.51 (0-31)	16.31 (0-36)	0.04

Prevalence of various parameters will be described as counts and percentage and will be compared in two groups. (On treatment for more than 3 months and not on treatment for PCOS).

Results: 150 females diagnosed with PCOS were included in the study. Mean age our patients 25.33 + 7.18 years. 57 (38%) had PCOS patients in our population had high AAI with negative body image. Comparison of AAI among treated and not treated PCOS patients is described in table 1.

Conclusion: Our study demonstrates a significant association between PCOS and impaired body image, affecting 38% of patients. This prevalence is considerably higher than general population. These findings highlight the importance of incorporating body image assessment into routine PCOS management. Early identification of impaired body image can facilitate timely referral to mental health professionals for appropriate psychological interventions. By addressing both the physical, hormonal and psychological aspects of PCOS, we can improve the overall well-being of patients.

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ABS0072

To Study the Prevalence of Impaired Body Image in Patients with Hypothyroidism and Compare it with General Adult Population; Experience from Central India

Author – Dr Preeti Sadhu

Introduction: Hypothyroidism is a common endocrine disorder with the prevalence of approximately 10.95% in India. Unmanaged hypothyroidism is often associated with increased morbidity and mortality, and can significantly impact a person's well-being. Common symptoms like weight gain, skin changes, voice changes, paresthesia, and constipation, hearing difficulties, swelling, lethargy and easy fatigability contribute to a negative body image. Social media's unrealistic portrayals further exacerbate this issue, leading to distress.

Aim and Objective: To study the prevalence of impaired body image in patients with hypothyroidism and compare it with general adult population.

Methods: All adults with or without hypothyroidism attending OPD fulfilling inclusion and exclusion criteria were asked to fill the questionnaire of Appearance Anxiety Inventory (AAI) after written informed consent. AAI comprises ten items, with respondents rating each item on a 5-point Likert scale ranging from 0 (not at all) to 4 (all the time). SumUp the responses for all ten items to calculate the total score. The total score will range from 0 to 40.

The interpretation of the score is as follows:

- 0-5: Low levels of appearance anxiety
- 6-15: Moderately high levels of appearance anxiety
- 16-25: High levels of appearance anxiety
- 26-40: Very high levels or extreme levels of appearance anxiety.

Results:

Table 1. Demographic Profile and AAI in Our Population

	Non-hypothyroid (N = 100)	Hypothyroid (N = 100)	
Male : Female	11:89	12:88	
Mean age (Years)	29.3 (18-49)	28.1 (18-50)	
			P value (*t*-test)
TSH (IU/mL)	2.1 (0.6-4.2)	8.1 (1.2-60)	0.01
Score 0-5	53	29	0.03
Score 6-15	16	23	0.12
Score 16-25	20	27	0.35
Score 26-40	11	21	0.02
Mean score	8.43 (0-31)	14.8 (0-36)	

Table 2. Comparison of AAI Score in Hypothyroid Patients According to TSH Values Less Than and More Than 10 mIU/L

	TSH (mIU/L) <10 (N = 70)	TSH (mIU/L) >10 (N = 30)	P value
Score 0-5	24 (34.29%)	5 (16.67%)	0.07
Score 6-15	15 (21.43%)	8 (26.67%)	0.7
Score 16-24	18 (25.71%)	9 (30%)	0.9
Score 25-40	13 (18.57%)	8 (26.66%)	0.1

Conclusion: Our study demonstrates a significant association between hypothyroidism and impaired body image, affecting over 40% of patients. This prevalence is considerably higher compared to the control group without hypothyroidism. These findings highlight the importance of incorporating body image assessment into routine hypothyroidism management. Early identification of impaired body image can facilitate timely referral to mental health professionals for appropriate psychological interventions. By addressing both the physical and psychological aspects of hypothyroidism, we can improve the overall well-being of patients.

ABS0073

To Study the Level of Vitamin B12 and its Association with Metformin Treatment in Diabetes Mellitus Patient

Authors – Dr Umesh Sharma, Dr Sandhya Gautam, Dr Shweta Sharma, Dr Ganesh Singh

Introduction: Vitamin B12, also known as cobalamin, is a water-soluble cobalt-containing vitamin that serves as a cofactor for metabolically significant enzymes. Patients have type 1 and 2 diabetes, have chances of developing vitamin B12 deficiency are greater than nondiabetics.

Aim and Objectives: To correlate the level of vitamin B12 with metformin with dose and duration in diabetes mellitus patients.

Material and Methods: The work was conducted in Department of Medicine, LLRM Medical College, Meerut. Total of 200 patients were enrolled in this study. Study included diagnosed diabetic (Type 1 and 2) patient of both sexes. All patients were interviewed and history taken regarding type of diabetes mellitus and duration of diabetes mellitus, personal history including smoking and alcohol intake, clinically detailed physical examination done, informed consent was obtained from all patients and confidentiality was maintained.

Results: Increased frequency of vitamin B12 deficiency among the diabetic patients has been documented in several cross-sectional studies and case reports. The prime factor associated with vitamin B12 deficiency among patients with diabetes mellitus is metformin use. The prevalence of vitamin B12 deficiency due to metformin use range from 6.7% to 35%.

Conclusion: Persons with diabetes mellitus on chronic metformin therapy showed lower levels of serum vitamin B12 status compared to persons not treated with metformin. This represented that metformin takes a possible risk for vitamin B12 deficiency. The study recommends base line B12 levels in high-risk patients before starting metformin therapy. It also recommend vitamins screening if therapy is advised high dosage of metformin for prolonged periods to avoid the neuropathic complications which are more common in diabetics due to the advanced glycation end products.

ABS0074

Role of Oral Microbiome in Type 2 Diabetes Incidence

Author – Dr Vinita Singh

Background: Oral cavity houses the second largest microbial population in our body and directly affects oral and systemic health. Many studies have revealed in the past that hyperglycemia causes change in oral microbiota and has adverse effect on oral health. This is linked with increased risk of periodontal disease. However, the reverse association i.e. the role of oral health and microbiota was not studied in detail till recently.

Objective: Aim of this presentation is to analyze and share the evidence of role of oral microbiome in risk and incidence of type 2 diabetes (T2D).

Methods: The author searched the MEDLINE literature database through PubMed, specifically looking for articles published after 2015. This was done to study the recent advancements on this topic.

Results: Altered bacterial composition was found in people with increased risk of T2D. More abundance of phylum Firmicutes was observed to associated with increased risk of T2D. Systemic inflammation was thought as possible mechanism. On the other hand, phylum Actinobacteria was associated with lesser risk of T2D, likely due to amylase inhibitor chemical produced by Actinobacteria. Genetic analysis of oral microbial population proved that different species inhabit different regions of oral cavity and certain species are positively correlated and few others as inversely correlated, with diabetes incidence.

Conclusion: Oral health affects 90% world population, and is an important risk factor in T2D incidence. It can affect glycemic response, fasting blood glucose and HbA1c value. It is important to focus on improving oral health in keeping with WHO's goal of oral health for all by 2030. This may help reduce the T2D burden. Studying oral microbiome may also have the potential of being tried as a new treatment option, for example, for developing medications similar to amylase inhibitors derived from oral microbiota.

ABS0075

Incidence of Steroid-induced Diabetes Mellitus Caused by Dexamethasone Used for Prevention of Chemotherapy Induced Nausea and Vomiting

Authors – Dr Sanjay Kumar Thakur, Dr Sukhesh Purush Dhakal, Dr Umesh Bogati, Dr Anil Shah, Dr George Jung Bush Katuwal, Dr Suman Supratik, Dr Bishnu Dutta Paudel

New onset diabetes is often noticed when steroid is used especially in higher dosage and for a prolonged duration. Aim of this study was to estimate proportion of patients' developing new onset diabetes mellitus after receiving dexamethasone for the prevention of chemotherapy-induced nausea and vomiting (CINV).

Methods: A prospective hospital based observational study was conducted from May, 2018 to April 2019 on chemotherapy treated cancer patients of the clinical oncology department of Bir hospital in Kathmandu who were kept on dexamethasone for the prevention of CINV. Inclusion criteria was: Adult cancer patients who were prescribed chemotherapy along with dexamethasone for the prevention of CINV. Exclusion criteria were: Previously diagnosed cases of diabetes mellitus or patients diagnosed of any other similar conditions or patients were using any other drugs (including long-term steroid therapy for other conditions) known to cause hyperglycemia/diabetes mellitus. At 0, 3 or 6 months of follow-up patients were tested for blood sugar or HbA1c for the evaluation of onset of diabetes mellitus. In newly diagnosed diabetic cases a cumulative dose and duration of dexamethasone use were calculated and analyzed for their relationships and tested for statistical significance. X2 test or fisher exact test, and *t* or *z* tests were applied depending on variable and sample size. Regression analyses was performed to examine the associations.

Result: A total of 47 patients were evaluated for the onset of dexamethasone (used for the prevention of CINV) induced diabetes mellitus during the study period from May, 2018 to April 2019. Out of 47 patients evaluated, we found 6 (12.7%) patients of new onset diabetes mellitus requiring antidiabetic treatment due to dexamethasone therapy even after withdrawal of dexamethasone. The higher (5/6) number of patients developed diabetes after getting ≥3 days cycles and ≥20 mg/day cumulative dose of dexamethasone per cycle. Obese patients developed diabetes mellitus more frequently than non-obese patients. Diabetes mellitus were found more frequently when they were prescribed dexamethasone along with oxaliplatin, paclitaxel, CAF, CAV, CAPOX and TAC regimens. However, none of the above findings were found statistically significant.

Conclusion: Incidence of dexamethasone induced diabetes mellitus used for prevention of CINV was found to be around 13% (p-0.81).

Keywords: Dexamethasone, CINV, diabetes mellitus

ABS0076

Early Screening of Psychological Distress in Diabetes - Development of a Concise Self-Reported Screening Questionnaire

Author – Dr Mahesh Mruthyunjaya

Background: Multiple findings highlight the co-occurrence of psychological distress among patients with diabetes mellitus. It can adversely affect diabetes management and overall quality of life. Early detection of psychological distress is crucial for timely intervention and improvement in diabetes management. Multiple questionnaires are available to screen psychological distress. However, the complexity of these questionnaires can limit their utility in real world situations.

Aim: The aim was to develop a concise, patient self-reported questionnaire as screening tool for psychological distress in diabetes patients, which can be easy to administer, facilitating its integration into routine diabetes care.

Methods: A comprehensive literature review was conducted to explore existing tools for screening psychological distress in diabetes patients. Following this, meetings with leading diabetes experts in India were conducted to design a screening questionnaire.

Results: The questionnaire was designed and tailored to identify the psychological challenges faced by diabetes patients. The focus in the questionnaire was to understand following domains of patients' life: emotional well-being, perceived stress related to daily diabetes care regimen, perceived support from caregivers and impact of diabetes management on quality of life. The designed questionnaire consisted of 8 questions and their responses were graded on a binary (yes/no) or 3-point scale. The total score ranged from 0 to 14 with a score of ≥5 indicating a greater likelihood of psychological distress, prompting the need for medical consultation.

Conclusion: This newly developed screening tool can facilitate early identification and consequently timely intervention of psychological distress in diabetes patients. Further validation of this tool in real world clinical settings is recommended.

ABS0077

Association Between Glycemic Control and Platelet Activity Assessed by Mean Platelet Volume in Type 2 Diabetes Mellitus

Authors – Dr Vijaiendre Singh, Dr Gowtham HG, Dr Pradeep Bansal

Introduction

- Diabetes mellitus is one of the most common chronic diseases in nearly all countries; it is increasing rapidly in every part of the world, to the extent that it has now assumed an epidemic proportions.
- Platelets play a key role in development of atherothrombosis, a major contributor of cardiovascular events.
- Several studies have suggested that diabetic patients have altered platelet morphology and increased platelet activity.
- Mean platelet volume (MPV) as a marker of platelet size is easily determined on routine automated hemograms and routinely available at a relatively low-cost.

Material and Methods

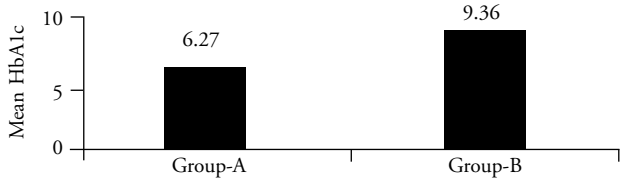
- **Inclusion Criteria:** Type 2 diabetes diagnosed using the ADA criteria
- **Exclusion Criteria:** Patients with
  - Thrombotic and hematological disease.
  - On anticoagulant medications.

Observations and Results

- Mean + SD of HbA1c of Group A and Group B subjects

HbA1c	N	Mean	Std. Deviation	Minimum	Maximum	P value
Group A	100	6.27	0.32	5.6	7.0	<0.001
Group B	100	9.36	1.21	7.3	12.6	

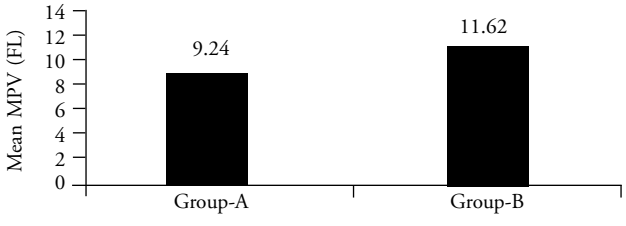
In the Group A HbA1c ranged from 5.6 to 7.0 % with a mean of 6.27 ± 0.32 %. In the Group B HbA1c ranged from 7.3 to 12.6% with a mean of 9.36 ± 1.2%. Thus the Group B had a higher mean HbA1c than Group A and the difference was highly significant (p <0.001).



- Mean ± SD of MPV of Group A and Group B subjects

MPV	N	Mean	Std. Deviation	Minimum	Maximum	P Value
Group A	100	9.24	0.38	8.4	10.2	<0.001
Group B	100	11.62	0.87	10.0	13.9	

In the Group A MPV ranged from 8.4 to 10.2 fL with a mean of 9.24 ± 0.38. In the Group B MPV ranged from 10 to 13.9 fL with a mean of 11.62 ± 0.87. Significantly higher mean MPV was observed in Group B as compared to Group A (p <0.001).



Discussion

- Although several measurements of platelet activity have been emerged as potential contributors to atherothrombosis many of these measurements are time-consuming, expensive, uses high sample volume, or require speciality training.
- Alternatively MPV, a marker of platelet size is easily determined on routine automated hemograms and routinely available at a relatively low-cost.
- MPV is a simple and cost-effective tool which can be explored for predicting the acute vascular events in patients suffering from diabetes mellitus.
- In our study a highly significant positive correlation was observed between HbA1c and mean platelet volume ($r = +0.984$, $p < 0.001$).

Conclusion

- Our study shows mean platelet volume is significantly higher in poorly controlled diabetics and has a strong positive correlation with HbA1c, which is a marker of glycemic control.
- Platelet activity and aggregation potential, which are essential components of thrombogenesis and atherogenesis, can be conveniently estimated by measuring MVP as a part of whole blood count.
- So improved glycemic control decreases mean platelet volume, which reflects recovered platelet functions and activity, and may prevent the possible role of platelets in cardiovascular events in type 2 diabetes.

ABS0078

Optimal Capillary Screen Cut-off of Thyroid Stimulating Hormone for Diagnosing Congenital Hypothyroidism Gathering Evidence

Authors – Dr Prashant Verma, Dr Mukesh Darshan, Dr Seema Kapoor

Objective: To determine an appropriate cut-off of capillary thyroid stimulating hormone (TSH) for congenital hypothyroidism.

Study design: Cross-sectional.

Participants: 174,000 neonates born in different hospitals of Delhi, India, from November 2014 to October 2016.

Main outcome measures: Correlation between initial and repeat capillary TSH level and subsequent venous free thyroxine (fT4) level.

Results: 102 newborns with initial/repeat capillary TSH level of ≥20 mIU/L (n = 174) were confirmed to have congenital hypothyroidism at mean (SD) age of 5 (4) days. A good correlation between capillary TSH level and confirmatory venous fT4 level and postnatal age of sampling was obtained (r -0.6,-0.4). The area under the ROC curve (AUC) was 0.81 (95% CI 0.75 to 0.88), indicating referral capillary TSH level of 20 mIU/L to be a good predictor of subsequent high venous TSH level.

Conclusion: A cut off of ≥20 mIU/L for capillary TSH screening beyond 24 hours of life is optimal in the Indian setting for deciding further recall and workup, keeping a balance between sensitivity and recall rate.

ABS0079

Diabetes Mellitus and Oral Health

Author – Dr Tejaswi Sharma

Diabetes mellitus, according to World Health Organization (WHO) is a silent epidemic which affects large number of people around the world and is directly related to the oral health status of the patients.

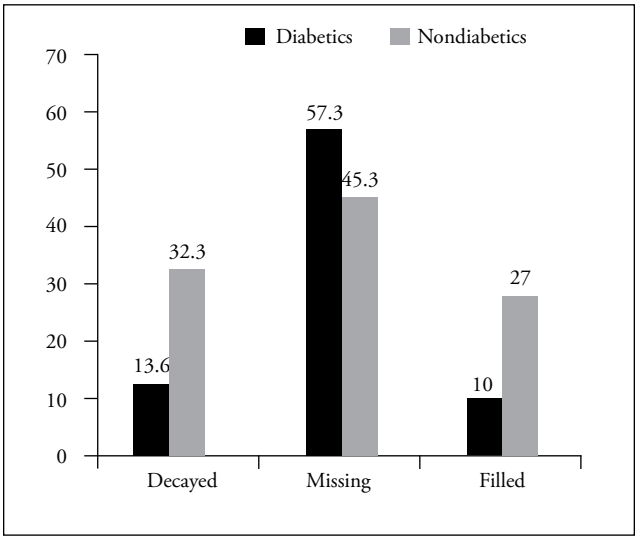
To know the prevalence of common dental diseases such as dental caries, periodontal diseases (pyorrhea), and treatment needs in a group of adult diabetic patients in private medical establishments of Tumkur city, south India, in comparison with nondiabetic patients. To create awareness among general medical practitioners about the common oral manifestations of diabetes and the importance of periodical dental check up for diabetics.

A group of 300 diabetic patients (males = 186, females = 114) and a control group of 300 nondiabetics (males = 180, females = 120) matched by age and sex were examined according to WHO criteria, for a period of 8 months.

The prevalence of dental caries was comparatively more in nondiabetics (32.3%) than in diabetics (13.6%). However, the prevalence of periodontal diseases (pyorrhea) was more in diabetics (92.6%) when compared to nondiabetics (83%).

Age group in years	Diabetics				Nondiabetics				Total	
	Male		Female		Male		Female			
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
35-44	29	15.5	11	9.6	27	15	14	11.6	81	13.5
45-54	98	52.6	68	59.6	92	51.1	78	65	336	56
55-64	39	20.9	19	16.6	40	22.2	21	17.5	119	19.8
65-74	20	10.7	16	14	21	11.6	7	5.8	64	10.6
Total	183	100	114	100	180	100	120	100	600	100

Contingency coefficient = 0.135; p <0.083



According to the (WHO), at least 220 million people or 2.8% of the population worldwide suffer from diabetes. Its incidence is increasing rapidly, and is estimated that by the year 2030, this number will almost double. The greatest increase in prevalence is expected to occur in Asia and Africa. The increase in incidence of diabetes in developing countries follows the trend of urbanization and lifestyle changes.

Diabetes can lead to changes in the oral cavity such as gum-related problems like gingival hyperplasia and periodontitis (pyorrhea). Other diabetes-related oral conditions include dental decay, candidiasis, and glossodynia. Some individuals may notice a fruity (acetone) breathe and others report xerostomia.

Unfortunately, caring for the oral cavity is often overlooked when trying to control other problems associated with diabetes which may contribute to hidden morbidity and undue suffering from oral health problems. Hence, the study was an attempt to know the oral health status and treatment needs in diabetics and to create awareness of oral health problems among general practitioners.

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