48th Annual Digital Meeting of the Research Society for the Study of Diabetes in India

DIABETES MELLITUS COMPLICATIONS

Several biochemical pathways mediate the micro- and macrovascular complications with hyperglycemia as the initial step. These complications are further influenced by other risk factors like hypertension, dyslipidemia, obesity, etc. There are other mechanisms like lipid peroxidation, oxidative stress, which also contribute to these complications. Aggressive management of hyperglycemia, hypertension, dyslipidemia and other contributing factors will delay the progression of these vascular complications.

Dr Vijay Viswanathan, Chennai

HYPERTENSION IN DIABETES: A DEADLY DUO

- Coronavirus disease 2019 (COVID-19) is associated with diabetes and/or hypertension, leading to increased morbidity and mortality in patients.
- Lifestyle modification remains the key to controlled diabetes and hypertension.
- SGLT2 inhibitors have a role in controlling hypertension and CVD.
- Angiotensin-converting enzyme/Angiotensin receptor blockers (ACE/ARBs) are the drugs of the first choice in the diabetic patient suffering from hypertension.

Dr Siddharth N Shah, Mumbai

SGLT2 INHIBITORS AND GLP-1RA: THE RISING STARS IN GUIDELINES OR ADJUNCT THERAPY IN TYPE 1 DIABETES

- Treatment of type 2 diabetes has become complex.
- GLP-1RA and SGLT2 inhibitors have prominent places in guidelines due to their effect on outcomes in type 2 diabetes beyond HbA1c (ASCVD, HF, CKD).
- GLP-1RA and SGLT2 inhibitors are promising adjunct therapies in type 1 diabetes, but benefits on HbA1c, insulin dose and weight need to be weighed against side effects (nausea, DKA). Benefits beyond HbA1c need to be proven in type 1 diabetes.

Dr Chantal Matheiu, Belgium

CREDENCE/DAPA-CKD

- Diabetic kidney disease occurs in 40% of type 2 diabetes patients. Because of their pleiotropic effect on the pump (heart), pipes (blood vessels) and filter (kidney), SGLT2 inhibitors (gliflozins) are excellent options for changing the course of the metabolic-cardiorenal continuum.
- The dedicated cardiovascular outcomes trials (CVOTs) on these molecules, i.e., EMPA-REG, CANVAS, DECLARE-TIMI, have demonstrated significant improvement in cardiorenal outcomes in patients with type 2 diabetes empagliflozin, canagliflozin and dapagliflozin, respectively.
- These trials have clearly shown advantages of SGLT2 inhibitors (canagliflozin and dapagliflozin) to reduce renal and CV outcomes in patients with diabetic kidney disease.
- Dapagliflozin goes one step ahead in establishing its utility in patients with CKD without type 2 diabetes.

Dr Sunil Kumar Kota, Berhampur

MEAL REPLACEMENT FORMULAS: FOR WEIGHT LOSS OR GLYCEMIC CONTROL

- Scientific evidence using meal replacement formulas have shown a reduction in weight and improvement in glycemic control.
- When used in newly diagnosed diabetes (<6 years diagnosis) as a part of a low-calorie diet, it can initiate a reversal of type 2 diabetes.
- Meal replacers are an ideal choice to replace an unhealthy snack to improve the protein intake while reducing carbs and calories and providing satiety.

Dr Sheryl Salis, Mumbai

NONDIABETIC RENAL DISEASE IN PATIENTS WITH DIABETES WITH ALBUMINURIA

- Diabetic nephropathy (DN) is not the sole renal disease in diabetics.

- Therapy and prognosis of DN and nondiabetic renal disease (NDRD) are different, and it is essential to differentiate between the two entities.
- DN is irreversible, and management can only prevent progression.
- Many NDRDs are often treatable and even curable.
- The accurate diagnosis provides disease-specific treatment and improves long-term prognosis.
- Proper treatment of such patients is associated with good clinical outcomes.
- Renal biopsy should be considered where the disease's course is atypical and clinical suspicion of NDRD is high.
- Challenging to convince a patient for renal biopsy but practicing physicians and diabetologists should try to convince the patients for renal biopsy where one is suspecting NDRD or something unusual rather than avoiding renal biopsy.

Dr Jagdeep Chugh, New Delhi

DIABETES CARE IN AGING POPULATION: OUR TARGETS AND APPROACH SAME?

Management in the elderly diabetes:

- Epidemiology: >20% of patients over 65 have T2DM; 10% of diabetes cases are diagnosed after the age of 65.
- Research and evidence: No long-term studies in the geriatric population; Heterogeneity necessitates a patient-centered approach.
- Treatment guidelines: Healthy geriatric patients may adhere to the same goals and therapy as younger patients; But "Start Low, and Go Slow"; Frail patients at risk for hypoglycemia, functional or cognitive impairment, and with a life expectancy of <5 years may have less intensive goals; Fasting blood glucose (FBG) <150 mg/dL and HbA1c 7-8 are acceptable endpoints.
- Five tips for the management of people aged ≥65 years old and type 2 diabetes.
  - Treat lifestyle advice and its reinforcement as an important intervention.
  - Early intensification of oral agents offers effective glycemic control and reduces the likelihood of future complications.
  - When choosing the next oral hypoglycemic agent (OHA) after metformin, consider the higher risk of hypoglycemia in people aged ≥65 years.
  - When choosing a dipeptidyl peptidase-4 (DPP-4) inhibitor, remember that differences exist within the class that may carry clinical implications for people with T2DM.
  - In summary, try to avoid treatment inertia and consider the right treatment at the right time for the right patient.

Dr Jugal Kishor Sharma, New Delhi

APPROACH TO A PATIENT WITH DFU

- Proper preventive footwear.
- Periodic footcare education.
- Foot examination every 3 months.
- Minimum weight-bearing. Maintain integrity (Intact) skin prevent, ulceration (Primary prevention).
- Achieve early healing of ulcerated skin (Remission).
- Keep healed ulcer healed and prevent reulceration (Recurrence).

Dr Sharad Pendsey, Nagpur

HIGH CV RISK AND CKD: A SINGLE DISEASE SPECTRUM

- Cardiovascular disease (CVD) is more frequent and severe in patients with chronic kidney disease (CKD) and is often neglected, underdiagnosed and undertreated. Increased CV risk in patients with CKD is multifactorial.
- It is only partly due to 'traditional' CV risk factors hypertension, diabetes mellitus, etc. A significant contribution is due to nontraditional kidney-specific risk factors, which result in a substantial increase in CVD burden, thus making the prevention of CVD by targeting traditional risk factors difficult.
- There is a need for innovative strategies to target nontraditional CV factors and more aggressive early preventive strategies.
- CKD should be viewed among the highest-risk groups for CV events and disease and require special attention and aggressive management at an individual patient level. Even in the guidelines and future research.
- Prevention of progression of CKD means prevention of CVD.
- Early aggressive preventive strategies and multifactorial intervention strategies in the later-stage are the needs of the hour.

Dr Vinod Mittal, New Delhi

U-TURN OF CVOTs IN DIABETES TREATMENT: DO WE NEED THEM?

- T2DM CVOTs have provided good risk-benefit evaluations.
- CVOTs were designed to show the safety of new glucose-lowering therapies.
- Findings have changed the paradigm of management of T2DM.
- Need for improvement in trial designs to make them more efficient, generalizable and cost-efficient.

Dr Kamlesh Khunti, UK

DIABETIC FOOT ULCER – PHYSICIANS PERSPECTIVE

- The attention to foot complications is generally poor.
- A significant proportion of type 2 diabetic patients is not offered foot education and examination, even in those showing a significant increase in the risk of foot complications.
- Even in the presence of foot complications or significant risk factors, many of the patients and/or their healthcare providers do not pay any attention to foot care.
- Thus, physicians or healthcare providers play a crucial role in orienting patient practices.

Dr Kaushik Ramaiah, Tanzania

CHARCOT ARTHROPATHY

- Charcot arthropathy in diabetes patients is increasing as a result of peripheral neuropathy.
- Charcot arthropathy can lead to severe deformity, disability, ulcers and amputation.
- Patient with diabetes must seek medical care and avoid delay in medical attention. Early diagnosis of Charcot arthropathy is of utmost importance by health workers for successful outcomes.
- Immobilization is essential to avoid further destruction.

Dr Zulfiqarali G Abbas, Tanzania

TREAT-INDIA 2 STUDY

- TREAT-INDIA 2 largest real-world data on teneligliptin effectiveness.
- To assess teneligliptin's effectiveness in improving glycemic control amongst Indian patients with T2DM in a real-world setting.
- The effectiveness of teneligliptin was analyzed based on mean change in glycemic parameters, i.e., HbA1c, FPG and postprandial plasma glucose (PPG) in those 3-months of treatment in 10,623 enrolled patients from 18 centers across India.
- The glycemic target of HbA1c ≤7%, FPG ≤130 mg/dL and PPG ≤180 mg/dL was achieved by 35%, 81% and 71% patients, respectively at 12 weeks.
- There was a statistically significant reduction in all the glycemic parameters with teneligliptin monotherapy and as well as in combination with other antidiabetic drugs ($p < 0.0001$ for all reductions) HbA1c reduction was 0.99%, which was statistically very significant.
- An essential difference between TREAT-INDIA 1 and 2 studies is that TREAT-INDIA 2 study also gives insights on the effectiveness of teneligliptin in special populations such as: Patients with renal impairment and patients of different age groups.
- Significant reductions in glycemic parameters were also found in T2DM patients with renal impairment.
- Teneligliptin effectively controlled glycemic parameters in all age groups (three groups: <60 years, 60-75 years and >75 years).

Dr Rajeev Chawla, New Delhi

DIABETIC KIDNEY DISEASE – MAGNITUDE OF PROBLEM AND MOLECULAR MECHANISMS

There are about 6.6 million cases of diabetic nephropathy (DN) in India. DN is one of the most important causes of premature death among patients with diabetes and a major health concern.

The natural history of DN differs according to the type of diabetes and whether microalbuminuria (defined as >30 mg but <300 mg albumin in the urine per day) is present. If untreated, 80% of people with type 1 diabetes and microalbuminuria will progress to overt nephropathy (i.e., proteinuria characterized by >300 mg albumin excreted daily), whereas only 20-40% of those with type 2 diabetes over a period of 15 years will progress.

Early detection of DN, the multifactorial approach targeting the main risk factors (hyperglycemia, hypertension, dyslipidemia and smoking), and the use of renoprotective agents such as the drugs that act on the renin-angiotensin-aldosterone system, may delay progression of kidney disease in DN, besides reducing cardiovascular mortality.

Dr Arvind Gupta, Jaipur

CAROLINA/CARMELINA

- With CAROLINA and CARMELINA trials, linagliptin has been studied in varied patient profiles.
- CAROLINA and CARMELINA provide evidence across a broad-spectrum of type 2 diabetes disease duration, CV and kidney risk. Together, CARMELINA and CAROLINA demonstrate the long-term CV safety profile of linagliptin and glimepiride.
- In CAROLINA, among adults with relatively early type 2 diabetes and elevated cardiovascular risk, the use of linagliptin compared with glimepiride over a median 6.3 years resulted in a noninferior risk of a composite cardiovascular outcome.

Dr Sachin Chittawar, Bhopal

DIABETES MELLITUS AND GENITOURINARY INFECTIONS

- Genitourinary tract infections are more common in patients with diabetes mellitus; they are associated with more complications and run a prolonged and protracted course due to more antimicrobial resistance of the uropathogens. These infections often lead to urosepsis, the most severe form of urinary tract infection (UTI) with mortality up to 30-40%.
- The most effective preventive measure is strict glycemic control. This will check overgrowth, colonization and adherence of microorganisms to uroepithelium in a glucose-rich environment in many tissues and especially in the urogenital tract due to glycosuria in uncontrolled diabetic patients. Strict glycemic control also checks the defective immunity seen in diabetic patients.
- Urogenital infections in diabetes mellitus patients is a new challenge in patients using SGLT2 inhibitor class of drugs in their management. SGLT2 inhibitors are associated with an increased incidence of urogenital infections as they cause pharmacologically-induced glycosuria. Though current evidence says genital infections are more common than UTIs and they respond well by temporarily withholding SGLT2 inhibitors and adding appropriate antibiotics without any complications. However, it is prudent that SGLT2 inhibitors should not be started or should be withheld if already started, at least in patients with a history of recurrent and complicated genitourinary infections, until further research provides evidence of added safety.

Dr Chandrasekhar Valupadas, Telangana

ANEMIA IN DIABETES

- The incidence of anemia in patients with diabetes mellitus is very frequently associated with the presence of kidney disease.
- For people with type 2 diabetes, the most common causes include iron deficiency and a decrease in erythropoietin levels, especially in those with kidney disease.
- It is important to promptly correct anemia in people with diabetes or DM-CKD, especially to improve the quality of life, improve clinical outcomes and decrease complications and mortality.
- Good metabolic and blood pressure control are essential methods to prevent anemia by preventing microvascular damage.

Dr Bachuvar Ravikumar, Nizamabad

IS THERE ANY ROLE OF HYDROXYCHLOROQUINE IN DIABETES MANAGEMENT?

- Hydroxychloroquine reduces HbA1c in the range of 0.9-1.3%. Additional benefits on lipids and marginal weight reduction.
- Cardiovascular benefits: In rheumatoid arthritis patients, it reduces CV events; OXI trial (Hydroxychloroquine in myocardial infarction [MI] in patients at Helsinki) is ongoing in post-MI patients.
- In which patients to use? Can be started in any patients inadequately controlled on two or more antidiabetic drugs (OADs) and/or insulin. It reduces insulin requirement and also a dose of other OHA when used with them. The real risk of retinopathy after 5 years is only 1% and after 10 years 2%.
- AAO recommends an initial ophthalmic evaluation within 1 year of starting HQ.
- In the absence of risk factors, subsequent ophthalmic evaluation can be done in patients receiving hydroxychloroquine for more than 5 years. If used for more than 5 years, include spectral-domain optical coherence tomography (SD-OCT) in annual screening.

Dr Sanjiv Indurkar, Aurangabad

CURRENT PREVAILING INSULIN PRACTICES IN INDIA (FROM CENTRAL INDIA)

- There is a pressing need to start insulin early.
- More patient awareness is required.

- We need more trained insulin advisors or diabetes educators. There is a need to increase technology use in monitoring post insulinization.

Dr Bharat Saboo, Indore

TOP 10 PAPERS OF INTERNATIONAL JOURNAL OF DIABETES IN DEVELOPING COUNTRIES

- Diabetic retinopathy (DR) is a marker of cardiovascular disease risk. DR 'score' can be used in Indians to forecast the annual incidence of DR.
- Women living in rural India are as much at risk for developing metabolic syndrome as those from urban areas. Physical exercise and lower body mass index (BMI) protect.
- Normal BMI and higher body fat are seen both in Jats from Haryana and tribal women from Manipal.
- Genetic studies can help to understand postprandial lipemia.
- Elevated iron markers are associated with diabetic microvascular complications.
- Charcot neuropathy in diabetes is not uncommon; in the acute phase, it can be mistaken for cellulitis and be associated with autonomic neuropathy.
- Hand dysfunction (similar to the foot) is seen in diabetes.
- Lipohypertrophy occurs commonly with insulin use in adults; the patients miss it.
- Self-care in both children and adults with diabetes can be improved than what it is now.
- In Shillong, the median monthly cost of treatment of diabetes was Rs. 5,375/; in coastal Karnataka, the annual median total cost of treatment was Rs. 5,041/-.

Dr GR Sridhar, Visakhapatnam

A STUDY OF THE PREVALENCE OF THE ANTIBODIES IN TYPE 1 DIABETES MELLITUS

Type 1 diabetes mellitus (T1DM) is associated with a high prevalence of autoantibodies, and antibody-negative T1DM is rare in our population.

The association with other organ-specific antibodies (especially thyroid and adrenal glands) and celiac disease are substantial. Screening of other organ-specific antibodies, e.g., anti-TPO antibody, antithyroglobulin antibody, antitissue transglutaminase antibody IgA (tTG IgA), and anti-21α-hydroxylase antibody may also be useful in this population.

Dr Kaushik Pandit, Kolkata

ADOPTING REAL-TIME MONITORING OF GLUCOSE AS A PARTNER IN DIABETES MANAGEMENT

Changing the discussion.

- Talking about time-in-range
- Tackling highs and lows
- Use of appropriate drugs and assessing their efficacy via visualization
- A conversation about acceptability.

Dr Partha Kar, UK

CURRENT PREVAILING INSULIN PRACTICES IN INDIA (FROM NORTH EAST INDIA)

- Nearly all the country regions showed a similar picture of the physician's perception of insulin initiation with minimal changes.
- However, geographical differences in dietary habits play an essential role in initiating a patient on a particular insulin regimen.

Dr Rupam Choudhury, Guwahati

LOW PROTEIN DIETS VS. VERY LOW PROTEIN DIETS IN DIABETIC NEPHROPATHY

Low protein diets improve glomerular filtration rate (GFR) in diabetic nephropathy patients.

Dr Zamurrud Patel, Mumbai

CLINICAL INTERPRETATIONS OF AUTOANTIBODY POSITIVITY IN AUTOIMMUNE DIABETES

- Measuring antibodies is beneficial in the diagnosis, prediction, and prevention of – Latent autoimmune diabetes in adults (LADA); Autoimmunity in gestational diabetes.
- Ruling out autoimmunity in young-onset diabetes.

Dr C B Sanjeevi, Sweden

INTERMITTENT FASTING: TIPS FOR CLINICIANS

- Intermittent fasting is an upcoming method to control diabetes and cardiac issues. It is not a one fit for all.
- There are promising results in weight loss and glycemic control and emerging benefits in the client's lipid profile. The downside is muscle loss, which is not good. Enough protein has to be given, and resistance exercise is advised to allow fat loss and not muscle loss.
- There are no guidelines as yet, and close monitoring of the clients is essential, even those

on hypoglycemic agents, especially when given to individuals on insulin. The eating period should have less number of meals, not eating every hour of the non-fasting period.

- Meals should have five food groups to avoid deficiencies.
- Snacks should not be the processed wheat flour or those with sugar or the wrong type of fat.

Dr Dharini Krishnan, Chennai

CARDIOMETABOLIC-BASED CHRONIC DISEASE: A NEW FRAMEWORK FOR EARLY PREVENTIVE CARE

- Obesity and diabetes are highly prevalent and complex chronic diseases.
- Obesity is better addressed when considered as an adiposity-based chronic disease (ABCD) to expose targets for early and sustainable preventive/ comprehensive care.
- Similarly, type 2 diabetes should be addressed as a dysglycemia-based chronic disease (DBCD).
- Since CVD is the most relevant consequence of ABCD and DBCD, clinicians should approach all patients using the cardiometabolic-based chronic disease preventive care framework.

Dr Jeffrey Mechanick, USA

TOP 10 PAPERS FROM ADA

The papers discuss therapeutic interventions in diabetes and some new inputs from the drugs already in use.

- In Insulin Icodec, the third-generation basal insulin was used in a head-to-head comparison study with Glargine 100 for inadequately controlled T2DM. It was found to have equal efficacy with comparable hypoglycemia, though it was slightly more in the initial days.
- Oral insulin also showed promise when administered to T2DM patients on oral OADs, wherein a significant reduction in HbA1c without increasing hypoglycemia rates or weight gain was observed compared to placebo.
- The news on SGLT2 inhibitors was that dapagliflozin became the first agent in this category of drugs to prevent diabetes. In the nondiabetic subset of subjects in the DAPA-HF study, there was a significant decrease in diabetes development compared to placebo (32%). This is of interest since the subjects with heart failure have a higher incidence of developing diabetes.
- Canagliflozin (Cana) in a real-world study showed the expected response of glucose-lowering with weight loss, but in subjects shifted from Cana 100 or any other SGLT inhibitors to Cana 300, there was a marginal decline in HbA1c as also additional weight loss.
- A subanalysis of the CREDENCE data with Cana showed that the initial drop in GFR does not alter the benefits of the drug for renal outcomes, the results being similar in those who had no change, a modest decline or significant fall in the GFR.
- Empagliflozin RWE study (EMPRISE) showed a significant drug benefit for major adverse cardiovascular events and hospitalization for heart failure compared with DPP-4 inhibitor use in propensity matched subjects, but the difference was seen only for heart failure events when the comparator was glucagon-like peptide 1 (GLP-1) analogs.
- In a subgroup analysis of the VERIFY study, the data among Latin Americans were similar to the overall cohort, with the vildagliptin + metformin being beneficial without side effects than metformin monotherapy.
- Teneligliptin improved the flow-mediated vasodilatation independent of the effect on the endothelial precursor cells (EPCs) despite decreasing stromal cell-derived factor (SDF).
- Interesting results were seen with glucagon analog in preventing hypoglycemia after the bariatric surgery for weight loss.
- The monoclonal antibodies (golimumab) administered after the onset of diabetes in type 1 diabetes decrease the insulin dose, with better C-peptide response.

Dr Bipin Kumar Sethi, Hyderabad

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