DRWA NEWS

Diabetes Research & Welfare Association

Volume 2 | January 2015

DRWA Events

GDM meet

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Editorial

Dr. Arunangshu Chakraborty

Dear friends, first of all I wish all our readers a very happy and prosperous new year. Last few months we have seen the world plunging into despair following terrorist attacks in schools to magazine head offices. On the domestic front- people of West Bengal are trying to digest news of financial scandals involving eminent politicians.

DRWA on the other hand has organized two important events in the last quarter: a medical camp and CME on commemoration of world diabetes day and a CME on gestational diabetes melitus (GDM). Both the programs were huge successes.

Second issue of our newsletter is larger in volume and scope, bringing out more articles with contribution from our new associates such as Dr. Anand Shankar and Dr. Anuj Maheswari. As we are already on the trajectory of growth, we can only hope that the newsletter will be bigger and better in the coming issues.

Secretary's Desk

Happy New Year 2015!

We are overwhelmed by the response to our inaugural newsletter, getting critical reviews and appreciation. The last quarter has been busy months for us. We are proud of us that we had organized three major events with huge success. We started with our usual monthly CME in October which was followed with a post Diwali get together on 31st October.

On 9th November we organized a mega screening camp on the occasion of World Diabetes Day. Lions Club of Tollygunge was a participant in this event. On this day we screened about 400 persons for diabetes, hypertension and ischemic heart disease and positive cases were subjected to various further tests like HBA1c, tests for neuropathy, BMD etc free of cost. Consultation and counseling were offered by our members. Many celebrities like Mr. Santo Mitra, ex-captain of Indian football team, Mr. Jayant Kripalani, actor and theatre personality, Ms. Papia Adhikary, noted actress graced this occasion. This social event was followed by a scientific symposium where Dr. Debasis Ghosh, senior interventional cardiologist & Dr. Soumitra Bhattacharyya, consultant internal medicine were the speakers.

We ended 2014 with another successful event-**Update on Gestational Diabetes Mellituson** 14th December where various aspects of GDM was addressed by speakers of repute from different parts of India. I take this opportunity to thank the speakers like Dr. Anuj Maheswari (Lucknow), Dr. S. Nallaperumal (Chennai), Dr. Anand Shankar (patna), Dr. Anirban Sinha and Dr. Barnali Ghosh (Consultant Gynaecologist) who took out their valuable time to be a part of this summit.

I hope 2015 will encourage us further to work hard to achieve higher goals for the organization. I wish this issue (2nd) will live upto the expectation and give us all a new direction and vision for the year 2015.

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Diabetes News

The American Diabetes Association (ADA) – Standards of Medical Care in Diabetes 2015

The ADA has released an updated set of evidence- based standards on screening for diabetes and treating patients. Here are some of the changes since 2013, published in Diabetes Care :

1. The BMI cutoff for screening Asian Americans for prediabetes and diabetes has been lowered from 25 kg/m2 and above (the cutoff for the general population) to 23 kg/m2 since this ethnic group is at increased diabetes risk at lower BMI levels.

2. The goal diastolic blood pressure has been raised from 80 to 90 mmHg for most patients with both diabetes and hypertension.

3. Following 2013 cardiovascular guidelines, statin treatment initiation should be based on individualized risk instead of LDL levels.

4. Premeal blood glucose targets have changed from 70-130 mg/dL to 80-130 mg/dL.

5. Patients with a history of foot problems should have their feet examined at every office visit.

6. All patients should limit the amount of time sitting to less than 90 minutes a stretch.

Veterans Affairs Diabetes Trial (VADT), Azad N, Agrawal L, Emanuele NV, et. al. Diabetologia. 2014; 57 (6): 1124-31.

Hypothesis :

Intensive Glycemic Control (INT) & higher plasma C-peptide levels in patients with poorly controlled diabetes would be associated with better eye outcomes.

Take home message :

Poor glucose control at baseline was associated with an increased risk of progression of diabetic retinopathy (DR). INT was associated with a decreased incidence of DR in younger patients but with an increased risk of DR in older patients. Higher C-peptide at baseline was associated with reduced incidence & progression of DR.

Coming events:

- Annual conference of DRWA in May 2015
- Apicon:19 -22 Feb, 2015 at Gurgaon
- Dipsi2015:27 -29 March, 2015 at Ooty
- Diabetes India 2015: 9-12 April, 2015 at Chennai
- ADA: 5 - 9 June, 2015 at Boston
- EASD: 14-18 September, 2015 at Stockholm, Sweden
- RSSDI2015: 30 Oct - 1 Nov, 2015 at Lucknow

CASE REPORTS

Dr. Anand Shankar

Case 1 : Glycemic management of a newly-diagnosed patient of metabolic syndrome with triple drug therapy of Metformin, Glimepiride and Pioglitazone

A 52-year-old, morbidly obese corporate banker, reluctant to come to the clinic, was brought by his family with symptoms of increased urination and excessive thirst for last one month. He also complained of dizziness, headache, increasing fatigue and decreased energy levels. He was a smoker, had a family history of diabetes, and his father died of heart attack. Additionally the patient complained of work pressure, inability to sleep for which he was taking alprazolam 0.25 mg occasionally; though he was not visiting any psychiatrist for any anxiety-related issues. In fact he was not going to office for last 7 days due to his problems.

Clinical examination and investigations:

Pulse: 82/min

Respiratory rate: 20/min

Blood pressure (BP): 200/120 mmHg

Weight: 93 kg, Height: 160 cm, BMI: 36.3

Fasting blood glucose (FBG): 172 mg/dL

Postprandial glucose (PPG): 256 mg/dL

HbA1C: 8.9%

Serum total cholesterol: 350 mg/dL

Serum triglycerides: 220 mg/dL

LDL: 182 mg/dL

HDL: 32 mg/dL

Diagnosis : Metabolic syndrome.

Medications prescribed : He was advised to stop smoking, do regular exercise and counseled for lifestyle modifications. He was prescribed Metformin (500 mg tds) and Glimepiride (1 mg bd). To control his blood pressure and lipid levels he was prescribed Ramipril 5 mg and Atorvastatin 20 mg respectively.

Follow-up : After 6 weeks follow-up, his blood glucose levels had improved but were still on higher side as FBG 156 mg/dl; PPG 208 mg/dL; HbA1C 7.9%. He confessed to not being adherent to any lifestyle modifications. He had erratic eating habits like skipping meals, binging on fast foods etc. The patient was contemplated for insulin therapy for glycemic control, but due to his non-adherence to any lifestyle/dietary modifications, he was started on triple combination therapy (Metformin 500 mg SR + Glimepiride 2 mg + Pioglitazone 7.5 mg). The patient was advised to take psychiatric consultation also. After further 6 weeks of follow-up, the patient had improved glucose levels (FPG 112 mg/dL; PPG 170 mg/dL; HbA1C 7.5%). His blood pressure and lipid levels showed a good control.

Case 2 : Uncontrolled type 2 diabetes achieving good glycemic control with Pioglitazone - based triple drug regimen

A 49-year-old security guard, known case of type 2 diabetes for last 4 years, went to his physician for a routine examination. His diabetes was managed with antidiabetic regimen (Metformin 500 mg bd and Glimepiride 2 mg). A few months ago he was suspected to be suffering from acute pancreatitis. He was trying to adhere to lifestyle modifications and dietary control but not very stringently. He would often miss his morning walk and indulge on junk food.

Examination and investigations:

Pulse: 76/min

Respiratory rate: 18/min

BP: 156/86 mmHg

Weight: 74 kg, height: 165 cm, BMI: 27.2

FBG: 138 mg/dL, PPG: 196 mg/dL, HbA1C: 7.4 %

Lipid parameters: Normal

Ultrasonography of abdomen: Normal

Diagnosis : Uncontrolled type 2 diabetes.

Medications prescribed : As the patient's glucose levels were not controlled with dual combination therapy, addition of DPP-IV inhibitors was considered, but after consultation with a senior diabetologist, the patient was started on pioglitazone based triple combination therapy (Metformin 500 mg SR + Glimepiride 2 mg + Pioglitazone 7.5 mg).

Follow-up : After 6 weeks of follow-up, the patient was seen to have better glucose control and his HbA1C levels also improved (FBG 122 mg/dL; PPG 178 mg/dL; HbA1C-6.9%). Since the patient was improving, Pioglitazone-based triple drug regimen was continued.

Discussion : A rising trend towards obesity has been seen worldwide thereby more number of patients present with uncontrolled type 2 diabetes. Optimal glycemic control not only prevents diabetes-related morbidities but also reduces the risk of morbidity/mortality related to adverse cardiovascular event.

Metformin and Glimepiride are established efficacious agents. However, morbid patients of metabolic syndrome need to strictly achieve normal glucose levels; insulin can be considered for the same.[1] However, in case 1, Pioglitazone was preferred as irregular dietary habits would have insulin-related hypoglycemia. The triple drug regimen improves glycemic control & lipid levels. Pioglitazone has effects on both glucose/ fat metabolisms, promotes a normo-lipidemic profile, is less atherogenic & demonstrates a reduced risk of cardiovascular/cerebrovasular event.

Metformin, Glimepiride and Pioglitazone, in different dual combinations have shown favorable effects on lipid profile, reduced BP, anti-thrombotic efficacy and improved coagulative states.[2-4] In the second case, prescription for DPP-IV inhibitor was ruled out due to several reasons. First, DPP-IV inhibitors are prone to cause more hypoglycemia when combined with Glimepiride, second, DPP-IV inhibitors are costlier, and thirdly, the patient was suspected to have acute pancreatitis few months back, therefore these drugs are believed to cause pancreatitis, more so in combination with Metformin.[5] Hence, Pioglitazone was preferred.

Conclusion : Pioglitazone in combination with other OADs in Indian patients was an effective treatment protocol in Glycemic control, reduction in FBG, PPPG and HbA1c and also helps in controlling weight gain in patients with T2DM. In Indian patient population, there wasn't increased risk of bladder-related abnormalities. Pioglitazone was therefore found to be a safe and efficacious addition to treatment in patients with poorly controlled diabetes.[6]

Before I finish : Pioglitazonestill remains a valuable treatment option in patients with type 2 diabetes.

Recommended by the Guidelines. Benefits outweigh the risks in those patients responding well to Pioglitazone.

Careful selection of patients and monitoring their response will help in optimizing treatment to patients.

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Clinical Trivia: Spot Diagnosis

Dr. Bijay Patni

Answer to the spot the diagnosis of October issue is

Prurigo Nodularis

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A SHORT HISTORY OF DIABETES

Dr. Tirthankar Satpathi

Diabetes now a days has became a world epidemic and many members of the medical field be a physician or a surgeon, try to attach themselves with this disease for many reasons. But nobody really bothers to know or remember the history of this disease. I could remember one, renowned diabetologist in our city Kolkata could not remember the significance of World Diabetes day in an television interview. So in a humble attempt to know diabetes the idea of writing a brief outline of the history of the disease I ventured in this not so popular topic. Without knowing the past how could we realise the present or the future? I did not venture in writing about the history of the treatment or different diagnostics in this attempt which can be done with in future.

Diabetes is one of the first diseases described by early physicians or healers. Written in a 3rd Dynasty papyrus, ancient Egyptian physician Hesy-Ra mentions frequent urination as a symptom. This dated in 1552 BC is the earliest known record of diabetes. The first described cases are believed to be of Type 1 diabetes. Indian physicians around the same time identified the disease and classified it as "madhumeha" or honey urine and noting that the urine would attract ants. Type 1 and Type 2 diabetes were identified as separate conditions for the first time by the Indian physicians Sushruta and Charaka around 400-500 AD with Type 1 associated with youth and Type 2 with obesity. The term "diabetes" the Greek word for "siphon." or "to pass through" was first used in 250BC by the Greek physician Apollonius of Memphis. In the first century AD another Greek physician Aretaeus, described the destructive nature of the affliction which he also named "diabetes". Eugene J. Leopold in his book "Aretaeus the Cappodacian" describes the Aretaeus' diagnosis: "...For fluids do not remain in the body, but use the body only as a channel through which they may flow out. Life lasts only for a time, but not very long. For they urinate with pain and painful is the emaciation. For no essential part of the drink is absorbed by the body while great masses of the flesh are liquefied into urine."

The disease must have been rare during the time of the Roman empire, the famous Greek physician Galen of Pergamum in 164 AD diagnoses diabetes as a kidney ailment and commenting that he had only see two cases during his career. In medieval Persia, Avicenna (980–1037 AD) provided a detailed account on diabetes mellitus in his "The Canon of Medicine" describing the abnormal appetite and the collapse of sexual functions, and he documented the sweet taste of diabetic urine. The term "mellitus" meaning from honey was added by a London physician Thomas Willis in the late 1600's to separate the condition from diabetes insipidus which is also associated with frequent urination. He determined whether his patients had diabetes or not by sampling their urine. If it had a sweet taste he would diagnose them with diabetes mellitus "honeyed" diabetes. This method of monitoring blood sugars went largely unchanged until the early 20th century. Avicenna also described diabetes insipidus very precisely for the first time, though it was much later that Thomas Willis in1674 differentiated it from diabetes mellitus in a chapter of his book "Pharmaceutice rationalis". In 1776 Matthew Dobson finds a substance like brown sugar in appearance and taste when diabetic urine evaporates. He also notes a sweetish taste of sugar in the blood of diabetics. He observes that, for some people, diabetes is fatal in less than five weeks and for others, is a chronic condition. This is the first time that a distinction between Type 1 and Type 2 has been made. In early 1800's, researchers develop the first chemical tests to indicate and measure the presence of sugar in the urine.

An important milestone in the history of diabetes was the establishment of the role of the liver in glycogenesis and the concept that diabetes is due to excess glucose production by Claude Bernard of France in 1857. The "islets of Langerhans" was discovered in 1869 by a young anatomist named Paul Langerhans. He identified the keys cells in the pancreas which produce the main substance that controls glucose levels in the body. The discovery of the role for the pancreas in diabetes is generally ascribed to Joseph von Mering and Oskar Minkowski, at the University of Strasbourg, France, in 1889 found that dogs whose pancreas was removed developed all the signs and symptoms of diabetes & died shortly afterwards. In 1910, Sir Edward Albert Sharpey Schafer suggested that people with diabetes were deficient in a single chemical that was normally produced by the pancreas, he proposed calling this substance insulin, from the Latin insula, meaning island, in reference to the insulin producing islets of Langerhans in the pancreas. The endocrine role of the pancreas in metabolism & indeed the existence of insulin, was further clarified in 1921, when Sir Frederick Grant Banting and Charles Herbert Best repeated the work of Von Meringand Minkowski & went further to demonstrate they could reverse induced diabetes in dogs by giving them an extract from the pancreatic islets of Langerhans of healthy dogs. Banting presents "The beneficial influences of certain pancreatic extracts on pancreatic diabetes", summarizing his work at a session of the American Physiological Society at Yale University in 1921. Also in 1921, Nicolae Constant in Paulescu, a distinguished Romanian scientist, publishes a series of articles describing his successful isolation of "pancreine" - insulin. Banting, Best and their colleagues especially the chemist Collip went on to purify the hormone insulin from bovine pancreases at the University of Toronto. This led to the availability of the first effective treatment for diabetes mellitus "insulin injections" and the first patient was treated in 1922. For this, Banting and the laboratory director John MacLeod received the Nobel Prize in Physiology or Medicine in 1923 and both shared their Prize money with others in the team who were not recognized, in particular Best and Collip. But Paulescu's credit is still not distinguished properly. Banting is honoured by World Diabetes Day, held on his birthday, November 14, which has recently became very popular in our city, Kolkata. The distinction between what is now known as Type 1 diabetes and Type 2 diabetes was first clearly made by Sir Harold Percival Himsworth and published in 1936. Though many things remained unwritten, this is in short a history of diabetes.

How Environmental factors have contributed to increase risk of T2DM in Asians

Dr. Bijay Patni

Lifestyle behaviour

In recent decades important demographic and environmental shifts have occurred in South Asia. Life expectancy is increasing while birth rates are declining, resulting in a significant proportion of older people. Additionally, the individual income and per capita expenditure have risen, as has migration from villages to cities. All of these factors have contributed toward lifestyle changes that now include physical inactivity, a shift away from traditional dietary habits, higher rates of tobacco use, and less sleep.

Physical inactivity : It is well established that reductions in physical activity increase the risk of T2DM in all ethnic groups. Various studies have shown differences in physical activity levels in South Asians, compared with general population, were substantial low.

Dietary changes : In addition to lower physical activity levels, higher intakes of refined carbohydrates and saturated and trans fats have been shown to increase T2DM risk by adversely affecting glucose metabolism and insulin resistance.

In South India, intake of polished white rice, with a high glycemicindex, have been linked to T2DM prevalence after adjusting for potential confounders. The typical South Asian diet is high in carbohydrates, trans fats, and saturated fat. A comparative study reported higher overall caloric intake, as well as a greater percentage of carbohydrate content in a typical South Asian meal, compared with standard European meals. Over the past several decade there have been increases in consumption of animal products, sugars, and fats in South Asian diets.

Several micronutrients such as magnesium, calcium, vitamin C, and folatehave been thought to play a beneficial role in glucose homeostasis.A study from the UK reported higher total energy intake among South Asian children compared with white Europeans, but lower intake of vitamin C, D, calcium, and iron.

Tobacco use : Several studies have established the association between cigarette smoking and increased risk for T2DM. eveloping countries particularly south-asiancountries account for a disproportionate amount of worldwide tobacco consumption

Sleep disturbance : Duration of sleep, both above and below average, has been shown to play a role in T2DM risk. Studies have noted that sleep restriction to only four hours caused decreases in the appetite suppressing hormone leptinand increases in the appetite inducing hormone ghrelin. In addition to duration, disturbances in sleep have also been shown to be associated with diabetes incidence.

Study results indicate that difficulties falling asleep or regular use of hypnotics were associated with an increased risk of developing diabetes. A cross-sectional study from India noted a high prevalence of snoring (40%) and daytime sleepiness (59%) in a normal weight urban South Indian population, both of which showed a significant positive relationship with impaired glucose metabolism. Furthermore, a study examining the associations between sleep apnea and risk factors for metabolic syndrome in North India suggested that obstructive sleep apnea was independently positively associated with fasting insulin levels. Such associations could be due to neuro–endocrine–metabolic associations related to sleep apnea that also might contribute to the development of T2DM.

Environmental pollutants : Persistent organic pollutants (POPs) encompass a variety of man-made chemicals and are of recent concern with regard to T2DM risk. A cross-sectional study using U.S. National Health and Examination Survey data reported strong associations between insulin resistance and serum concentrations of POPs. There have been studies noting detectable levels of POP in mussels collected from the coastal waters of India. High levels of POPs have also been observed in Indian municipal dumping sites.

To conclude, current evidence suggests that the prevalence of T2DM in South Asians is high and rising both in South Asian countries, as well as in the diaspora. These increases are due, in part, to higher T2DM incidence rates in South Asians compared with Caucasians, which suggests an increased propensity for South Asians to develop the disease. This notion is highlighted by evidence indicating that South Asians (1) are more insulin resistant than Caucasians even at similar levels of BMI and total body fat percent, (2) demonstrate early impairments in β-cell function, (3) exhibit greater tendencies toward visceral fat deposition, even as neonates, and (4) have lower levels of circulating plasma adiponectin and higher levels of plasma leptin. In addition to possible innate predisposition, South Asians are currently experiencing changes in lifestyle behaviors due to migration or nutritional transitions, resulting in physical inactivity and a shift away from traditional dietary habits to those that include greater overall carbohydrates, saturated, and trans fats and lower amounts of dietary fiber. Coupled with an increased propensity for T2DM, the recent shifts in lifestyle behaviors only serve to exacerbate the risk for disease.

Therefore there is a greater need for **primary prevention**, especially as South Asians continue to become more affluent, have greater access to high-fat foods, adopt more sedentary lifestyles, experience a growing population of aging individuals, and migrate to diaspora countries. Evidence indicates that

lifestyle interventions, including increases in physical activity and improvements in dietary quality, are effective at preventing or delaying the development of T2DM in high-risk groups.

Evidence suggests that the most cost-effective method for T2DM prevention is to target individuals with prediabetes. Results from a population based cohort study indicated that while individuals with prediabetes accounted for 16% of the population, they contribute to over 60% of incident T2DM cases, thereby accounting for a significant proportion of those at high risk. Two randomized trials in persons with impaired glucose tolerance, The Finish Diabetes Prevention Study and the Diabetes Prevention Program (DPP), demonstrated that the three year risk of developing T2DM was reduced by 58% in those receiving intensive lifestyle interventions. Components in such interventions included lessons on behavior change, physical activity requirement of at least 150 minutes per week, well-balanced diets rich in whole grains, fruit and vegetables, with <30% total fat and no more than 10% saturated fat, and weight loss of at least 5–7%.

In true sense prevention is the key to arrest the diabetes epidemic but such preventative efforts need to be directed both at individual and population levels, should be culturally sensitive and aggressive, and should start early in order to reduce the risk of T2DM in this highly susceptible population, the as I an population.

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WHY DOES GDM MANAGEMENT FAIL?

Dr. Anuj Maheshwari

Women with GDM are at increased risk of future diabetes; predominantly type 2 DM as are their children and the following subsequent generations. So in this way GDM has become a tool for *Intergenerative transmission of Type 2 DM*. As Diabetes is increasing in India very fast so a recommendation is to screen all Indian women for glucose intolerance in pregnancy. Screening is essential in all pregnant women as the Indian women have 11 fold increased risk of developing glucose intolerance during pregnancy compared to Caucasian women. Among ethnic groups in South Asian countries, the Indian women have the highest frequency of GDM.

High level of Adiponect in, increased insulin resistance, obesity, glucose intolerance, severe hyperlipidemia and increased level of inflammatory markers like CRP and interlukin-6 like features of pregnancy are shared almost with a low grade variant of metabolic syndrome x. Finally it leads to fetal overgrowth, increased adiposity at birth, Neonatal obesity, child & adult obesity, increased chances of developing diabetes & CV risks in later life.

Discrepancies among various international recommendations : As far as Current recommendation for screening & diagnosis for GDM is concerned, answer depends to whom you ask, ADA, ACOG, WHO or IADPSG.

As per ADA recommendations, Universal Routine Screening is recommended among all pregnant women by G T Tat 24-28 weeks of gestation. Although the best method for diagnosing "GDM" continues to be controversial. ADA recommends a 50-gram 1-hour glucose challenge test (GCT) without regard to meal at 24-28 wks of pregnancy and it has been seen that 140 mg/dLresults in 80% detection of GDM and if this cut off value is reduced to 130, GDM detection can be achieved up to ninety percent. It should be followed by a 100-gram, 3-hour OGTT for those with abnormal screening result on GCT.

One-step approach of ADA : Ican be used for high risk women by doing directly 100-gm 3-hour O G T T. As per ADA if Glycoselated hemoglobinis more than 6.5, it should be taken as overt diabetes while A1c between 5.7 to 6.4 reflects increased risk for Diabetes.

International Association of Diabetes and Pregnancy Study Groups, recommends fasting plasma glucose 92 mg/dl, 1 hour after 75 gm of Glucose, plasma glucose 180 mg/dl and 2 hour plasma glucose 153 mg/dl. One or more of these values must be met or exceeded for diagnosis of GDM.

Why does GDM management fails in our settings ?

While going with ADA Criteria number of blood samples are more. More visits are required to Ante Natal Clinic on 2 occasions, for Screening and to confirm diagnosis. Patient is lost to follow up till the diagnosis is established. 18-23% pregnant women whose GCT was positive failed to return for definitive OGTT. Family members do not prefer to keep pregnant lady fasting to make her available for test. Post prandial hyperglycemia is not frequently checked. People are scared more of insulin dose instead of maternal hyperglycemia. To avoid the risk of Hypoglycemia, tight glycemic control is not achieved. Maternal diabetes in pregnancy is the most common cause of macrosomia. Macrosomia is the term used to describe an oversized fetus; associated with higher weight and accumulation of fat in childhood & with a higher rate of obesity in adulthood. Long-term adverse health outcomes involved.

Unfortunately Macrosomia comes up as good news, In many indian undernourished families where growth retardation, low birth weight & even fetal loss are common. In a traditional Indian family when a women enters in pregnancy, she is better taken care in terms of food and macrosomia is mistakenly taken as desired outcome of good care. The relationship between obesity and poverty remains complex. Some developing countries face the paradox of families in which the children are underweight and the adults are overweight. Intra Uterine Growth Retardation and resulting low birth weight, which apparently confer a predisposition to obesity later in life through the acquisition of a "thrifty" phenotype. When accompanied by rapid childhood weight gain, is conducive to the development of insulin resistance and metabolic syndrome.

New recommendations by DIPSI

Single test procedure to diagnose GDM in community: After 75 gm oral Glucose load without regard to time of last meal, a venous blood sample is collected at 2 hours for estimating plasma glucose by the GOD-POD Method. GDM is diagnosed if 2 hour plasma glucose is $\geq$ 140 mg/dl. If 75 gm Glucose packet is not available, remove 5 level teaspoons (not heaped) of Glucose from a 100 gm packet which is freely available.

Protocol for screening : As soon as pregnancy is detected, Spot test or 2 hour PG(after giving 75 gm of Glucose) is $\geq$200 & A1c is >6 then it should be considered Pre GDM or overt GDM. If 2 hour PG is between $\geq$140 & $\leq$ 199 mg/dl it should be categorized as GDM. Fasting plasma Glucose should be less than 90 mg/dl in pregnancy but it is not so much helpful for diagnosis of GDM unless supported by 2 hour post glucose value, though it helps in diagnosis of overt GDM. if After 2 hour PG $\geq$120 & $\leq$139 mg/dl it is called Gestational Glucose Intolerence and demands life style modifications. If it is less than 120 mg/dl after 75 gm of Glucose, it should be taken as normal and test should be repeated at 16 weeks of gestation and again if it is found normal test should be done at 24-28 weeks of gestation. Then Test at 32 to 34 weeks of gestation and finally in later weeks of pregnancy. Screening must be saught particularly when rapid maternal weight gain is seen. Most of the GDM (94%) can be managed by medical nutrition therapy.

Impact of new recommendations : National family health survey has shown that incidences of small for gestational age could be reduced by 41.2 percent while occurrence of large for gestational age found to be reduced by 63.2 percent. This single initiative of achieving birth weight of infants appropriate for gestational age, would have significant positive effect on the overall health of the family and the community.

Treatment of GDM of 2hr PG $\geq$140 mg/dLreduces serious perinatal morbidity & may also improve the women's health-related quality life. Cumulative risk of offspring developing Type 2 DM was 30% at the age 24 yrs when maternal 2 hr PG was $\geq$ 140 mg/ dL ($\geq$7.8 mmol/L). The procedure may be convenient for the care givers, as well as for the care seekers. Attending the first prenatal visit in the fasting state is problematic in many settings & the dropout rate is very high when a pregnant woman is asked to come again for the glucose tolerance test. Also, fasting values do not reflect post prandial hyperglycemia in all GDM. Estimation of FPG is not recommended as FPG will never exceed 90 mg/dl if 2hr postprandial glucose <120 mg/dl. Besides, GDM being an insulin resistant state requires an oral glucose test to confirm the diagnosis. Elevated postprandial glucose may be more predictive of the potential for fetal morbidity compared with fasting or pre-prandial values. Therefore fasting glucose values alone do not predict the need for pharmacological therapy.

All Complicated Problems Have Simple Solution : For diagnosis of GDM, plasma glucose should be 140mg/dl or more, 2 hour after 75 gm Glucose while treatment target is 120 mg/dl or less, two hour after meal.

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DRWA TEAM AT THE

WORLD DIABETES DAY PROGRAM AT DESHAPRIYA PARK