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An Overview and Update on Diabetes Mellitus

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Dear Editor-in-Chief

Diabetes mellitus is a common medical condition, which causes enormous burden on health services both in managing the condition or its complications. It was described thousands of years ago by the Romans and given the name diabetes mellitus (They Syphon of Honey). The Arabs also described diabetes many years ago and diagnosis was made when flies aggregate on diabetic urine or when a drop of urine changes colour when dried on black cloth to white coloured powder¹.

Type 2 diabetes is increasing and possibly due to change in life style from active life to sedentary urban life with increasing stress. Also, the change in weight due to abdominal obesity from thin working people to obese, mainly because of abdominal fat (increase the waist to hip ratio and shape from pear shape to apple shape). Type 2 diabetes constitutes 95% of total number of diabetics and the estimated prevalence in the Arab World ranges between 10% and 30%. Type 1 diabetes in the younger age group and children from day one of birth is also increasing, but less than type 2 in Arabs.

Types

1. Type 1 (insulin dependent diabetes mellitus).
2. Type 2 (non-insulin dependent diabetes mellitus).
3. Gestational diabetes (develops in a non-diabetic lady at about 24 week of gestation).
4. There are other types of diabetes like MODY (maturity onset of diabetes in the young) following pancreatitis and surgical removal of pancreas but these are not common¹.

Diagnosis

1. Two fasting bloods on different days above 126 mg/dL.
2. Oral glucose tolerance test (OGTT), 75 g of dextrose sugar given to fasting patient and blood glucose level taken at 2 hr. In a resting state blood glucose level is above 200 mg/dL.

Blood glucose levels fasting on two occasions between 110 and 126 mg/dL are considered as a pre-diabetic case, which will require intervention to prevent or delay frank diabetes mellitus.

MANAGEMENT

- a. Being a painless disease with many complications if not controlled optimally, diabetes will require

empowering patients to take control of their own diabetes. Empowerment means patients would have 1. Autonomy, 2. competency and 3. relatedness. The latter would save regular visit of doctors and maintains good health. It is therefore educating patients and their families managing day to day diabetes control and report any ill health is paramount.

- b. Requirments for the patients and doctors to know and evaluate:
 1. Treating hypoglycemia.
 2. Checking blood glucose levels 2 hr before and after meals should be (75–160 mg/l) at home
 3. Blood pressure.
 4. Retinal screen evaluation at least once a year.
 5. Foot examination for sensations, intact skin and pulses of dorsalis pedis and posterior tibial arteries.
 6. The routine blood checkup once in a year including FBC, HbA1c, lipids profile, U&E, LFT, TSH, Uric acid, Vitamin D, Spot urine albumin to creatinine ratio^{1,4}.

Outpatient management

A group is formed of doctors, nurses, dieticians, retinal screening technicians and Podiatric physician.

Each doctor and nurse in a diabetic clinic should be well informed of what is required during evaluation from taking history to prescribing.

1. Complete history taking including approximate date of diagnosis (duration), symptoms, family history of diabetes and any complications that may have taken place.
2. Complete medication history and drugs that may lead to diabetes like steroids or thiazide diuretics. Also, any medication interactions.
3. Doctors and nurses should be well informed of the medications therapeutics (kinetics and dynamics) of all medications used. Therapeutics and comprehensive knowledge is vital as any medication given to patient is for life and may need adjustment with time. Drugs can lead to serious side effects and interactions. All doctors are responsible for what they prescribe.
4. Examination
 - a. Head and neck—retinae and carotids for bruit plus oral cavity.

- b. Chest—for 3rd heart sound and murmurs. Basal crepitation.
- c. Abdomen—for Aortic and Renal Artery bruit.
- d. Lower limbs—Skin, motor power (standing from seated without the support of arms), sensory nerves examination mainly on the tip of two big toes for vibrations perception using 128 MHz Toning Fork, 10 g monofilament, cotton wool touch sensation. These tests will cover deep and superficial nerves. Then, the pulses of dorsalis pedis and posterior tibial arteries.
- e. Blood pressure supine or seated and on standing posture within 1 min a drop in systolic by more than 20 mm Hg or diastolic by more than 10 mm Hg or both constitute postural hypotension and blood pressure medications, or autonomic neuropathy should be considered and excluded^{1,3}.

Exercise for diabetics

Daily activities are paramount for diabetic patients. Sedentary living can lead to weight gain and suboptimal diabetes control. Patients should be encouraged to take regular exercises like daily walks for at least 30 min. Any activity or exercise should be done before meals or at least 2 hr after meals. Exercises should be only aerobics (isotonic) like walking, swimming, badminton, etc. rather than muscle building and strenuous exercises (isometric exercises). Isometric exercises can lead to increase blood pressure both systolic and diastolic to significant levels during these activities^{1,5}.

Diet adjustment for diabetics

The following should be considered when regulating diets for diabetics:

1. Age of patient.
2. Type of diabetes.
3. Weight of patient (body mass index (BMI) above 27 measured: weight/(height)²).
4. Activity and life style (sedentary or active).
5. The presence of comorbidities and complications like chronic kidney disease, stroke, systemic hypertension, dyslipidaemia, hyperuricaemia, hemochromatosis, malabsorption and coeliac disease, gastroparesis and bacterial overgrowth.

All the above should be considered and a healthy diet with good breakfast and lunch with reasonable supper. For type 1 diabetes, they may need snacks between meals like a piece of fruit or a cup of yogurt. The meals that are fried with oil should be avoided at all costs. Sodium should be reduced in renal impairment as well as potassium and magnesium. Other vitamin supplement should be assessed like B12, Folate and Vitamin D as well as Ferritin and should be treated or supplemented accordingly. Certain nutritional requirements may be need for a diabetic

patient going for major surgery or has diabetic complications being treated in hospitals. Parenteral or percutaneous endoscopic gastrostomy (PEG) require good knowledge in types of intravenous fluids the speed and state of heart and renal functions. The same apply to PEG feeding and how to adjust insulin or treatment according to the condition^{2,4}.

Hospital management^{1,3}

This will be either for

1. Acute complications of diabetes
 - a. Diabetic Keto Acidosis (DKA)
 - b. Diabetic Lactic Acidosis
 - c. Diabetic Hyperosmolar diabetic coma
2. For pre-peri and post-operative care
3. For Stroke patients who require intravenous nutrition management or PEG

Complications^{1,5}

Diabetes complications can be either acute or chronic:

Acute complications

- A. The most common is hypoglycemia
- B. Diabetic keto acidosis
- C. Diabetic lactic acidosis
- D. Diabetic hyperosmolar coma

Chronic complications

This can involve almost all organs of the body from skin to any other major organ in the body. This usually divided to either micro vascular or macrovascular complications.

A. Microvascular complications:

1. Retinopathy
2. Neuropathy: (a) central nervous, (b) peripheral nervous, (c) autonomic nervous
3. Nephropathy
4. Male erectile dysfunction
5. Gastrointestinal
6. Dermopathy

B. Macrovascular complications:

1. Cerebrovascular
2. Coronary vessel disease
3. Peripheral vessel disease

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