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A STUDY ON DIABETES MELLITUS

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ABSTRACT

Diabetes mellitus (DM) is a group of metabolic disorders characterized by hypergly cemia and abnormalities in carbohydrate, fat, and protein metabolism

Diabetes mellitus, often known simply as diabetes, is a group of common endocrine diseases characterized by sustained high blood sugar levels. Diabetes is due to either the pancreas not producing enough insulin, or the cells of the body becoming unresponsive to the hormone's effects. Classic symptoms include thirst, polyuria, weight loss, and blurred vision. If left untreated, the disease can lead to various health complications, including disorders of the cardiovascular system, eye, kidney, and nerves. Untreated or poorly treated diabetes accounts for approximately 1.5 million deaths every year.

The major types of diabetes are type 1 and type 2, though other forms also exist. The most common treatment for type 1 is insulin replacement therapy (insulin injections), while anti-diabetic medications (such as metformin and semaglutide) and lifestyle modifications can be used to manage type 2. Gestational diabetes, a form that arises during pregnancy in some women, normally resolves shortly after delivery.

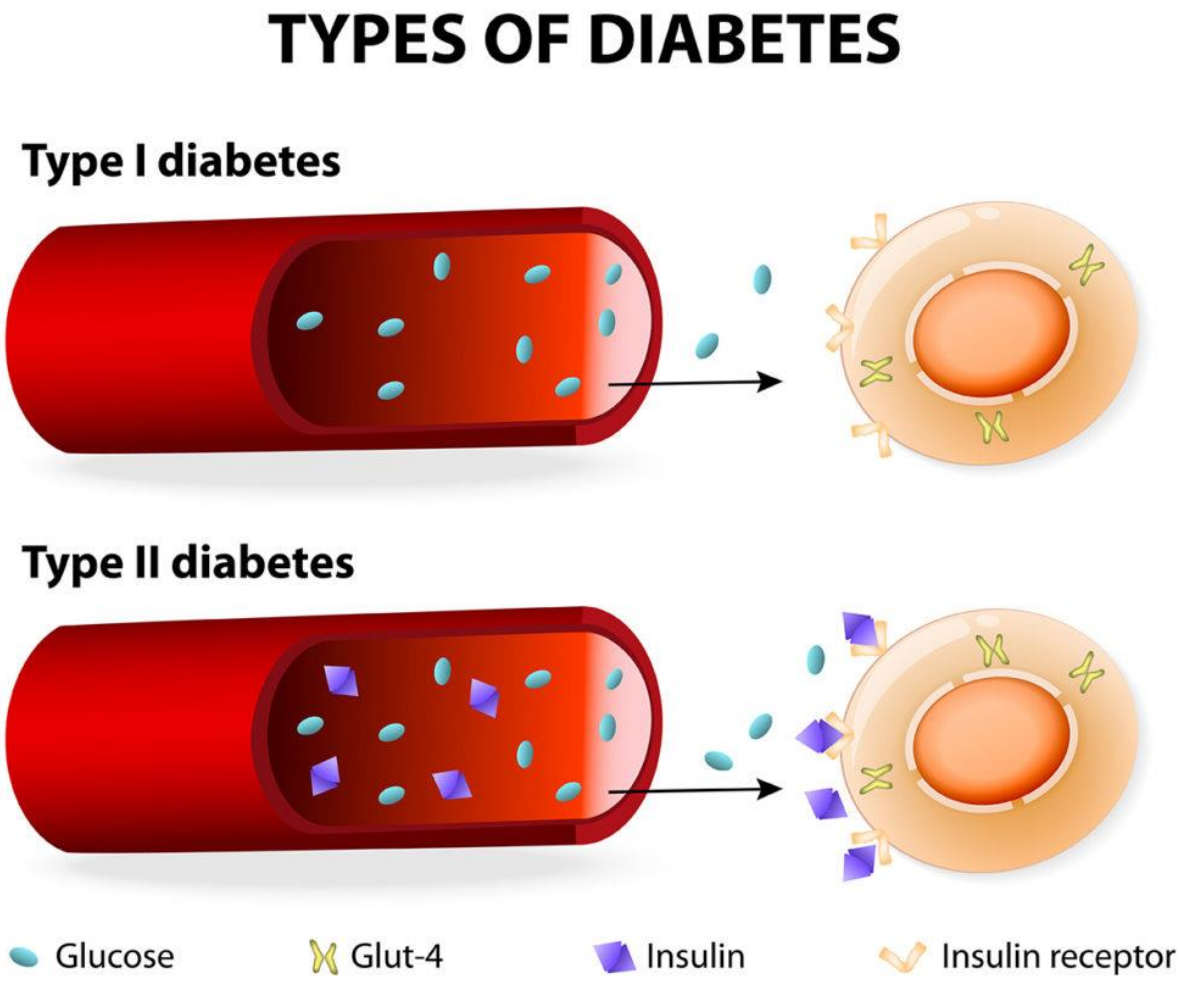
KEYWORDS:- Diabetes mellitus,metab olism,disease,injections,disrsorders.

DIABETES MELLITUS

Diabetes mellitus (DM) is a group of metabolic disorders characterized by hyperglycemia and abnormalities in carbohydrate, fat, and protein metabolism

Causes

Diabetes is classified by the World Health Organization into six categories: type 1 diabetes, type 2 diabetes, hybrid forms of diabetes (including slowly evolving, immune-mediated diabetes of adults and ketosis-prone type 2 diabetes), hyperglycemia first detected during pregnancy, "other specific types", and "unclassified diabetes". Diabetes is a more variable disease than once thought, and individuals may have a combination of forms.



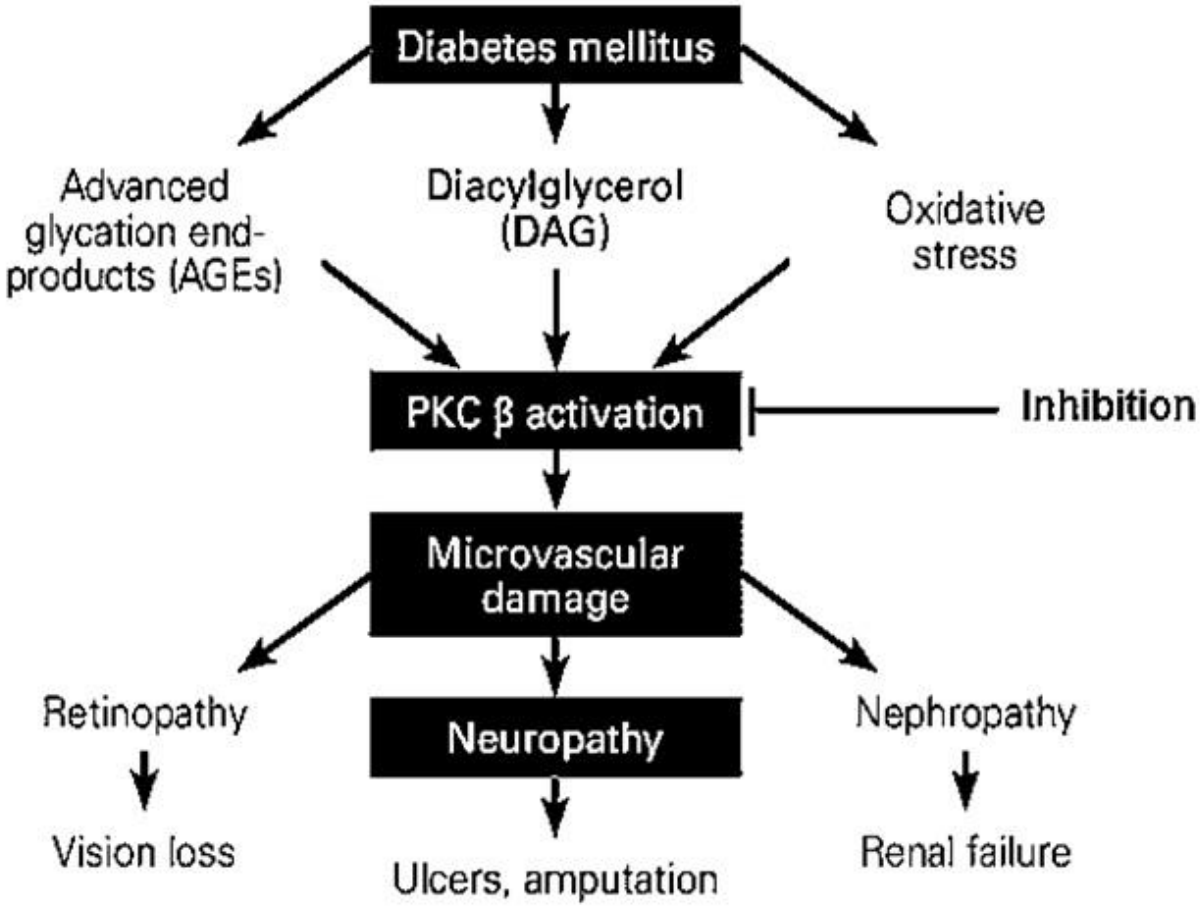
PATHOPHYSIOLOGY

• Type 1 DM (5%–10% of cases) usually develops in childhood or early adulthood and results from autoimmune-mediated destruction of pancreatic β-cells, resulting in absolute deficiency of insulin. The autoimmune process is mediated by macrophages and T lymphocytes with autoantibodies to β-cell antigens (eg, islet cell antibody, insulin antibodies).

• Type 2 DM (90% of cases) is characterized by a combination of some degree of insulin resistance and relative insulin deficiency. Insulin resistance is manifested by increased lipolysis and free fatty acid production, increased hepatic glucose produc tion, and decreased skeletal muscle uptake of glucose.

• Uncommon causes of diabetes (1%–2% of cases) include endocrine disorders (eg, acromegaly, Cushing syndrome), gestational diabetes mellitus (GDM), diseases of the exocrine pancreas (eg, pancreatitis), and medications (eg, glucocorticoids, pent amidine, niacin, α-interferon).

• Microvascular complications include retinopathy, neuropathy, and nephropathy. Macrovascular complications include coronary heart disease, stroke, and peripheral vascular disease.



CLINICAL PRESENTATION

TYPE 1 DIABETES MELLITUS

• The most common initial symptoms are polyuria, polydipsia, polyphagia, weight loss, and lethargy accompanied by hyperglycemia.

• Individuals are often thin and are prone to develop diabetic ketoacidosis if insulin is withheld or under conditions of severe stress.

• Between 20% and 40% of patients present with diabetic ketoacidosis after several days of polyuria, polydipsia, polyphagia, and weight loss.

TYPE 2 DIABETES MELLITUS

• Patients are often asymptomatic and may be diagnosed secondary to unrelated blood testing.

• Lethargy, polyuria, nocturia, and polydipsia can be present. Significant weight loss is less common; more often, patients are overweight or obese.

DIAGNOSIS

• Criteria for diagnosis of DM include any one of the following:

1. A1C of 6.5% or more

2. Fasting (no caloric intake for at least 8 hours) plasma glucose of 126 mg/dL (7.0 mmol/L) or more

3. Two-hour plasma glucose of 200 mg/dL (11.1 mmol/L) or more during an oral glucose tolerance test (OGTT) using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water

4. Random plasma glucose concentration of 200 mg/dL (11.1 mmol/L) or more with

classic symptoms of hyperglycemia or hyperglycemic crisis In the absence of unequivocal hyperglycemia, criteria 1 through 3 should be con firmed by repeat testing

• Normal fasting plasma glucose (FPG) is less than 100 mg/dL (5.6 mmol/L).

• Impaired fasting glucose (IFG) is FPG 100 to 125 mg/dL (5.6–6.9 mmol/L).

• Impaired glucose tolerance (IGT) is diagnosed when the 2-hour postload sample of OGTT is 140 to 199 mg per dL (7.8–11.0 mmol/L).

• Pregnant women should undergo risk assessment for GDM at first prenatal visit and have glucose testing if at high risk (eg, positive family history, personal history of GDM, marked obesity, or member of a high-risk ethnic group).

TREATMENT

• Goals of Treatment:

Ameliorate symptoms, reduce risk of microvascular and mac rovascular complications, reduce mortality, and improve quality of life. Desirable plasma glucose .

GENERAL APPROACH

• Early treatment with near-normal glycemia reduces risk of microvascular disease complications, but aggressive management of cardiovascular risk factors (ie, smok ing cessation, treatment of dyslipidemia, intensive blood pressure [BP] control, and antiplatelet therapy) is needed to reduce macrovascular disease risk.

• Appropriate care requires goal setting for glycemia, BP, and lipid levels; regular monitoring for complications; dietary and exercise modifications; appropriate self monitoring of blood glucose (SMBG); and laboratory assessment.

NONPHARMACOLOGIC THERAPY

• Medical nutrition therapy is recommended for all patients.

For type 1 DM, the focus is on physiologically regulating insulin administration with a balanced diet to achieve and maintain healthy body weight. The meal plan should be moderate in carbohy drates and low in saturated fat, with a focus on balanced meals.

Patients with type 2 DM often require caloric restriction to promote weight loss. • Aerobic exercise can improve insulin sensitivity and glycemic control and may reduce cardiovascular risk factors, contribute to weight loss or maintenance, and improve well-being.

EVALUATION OF THERAPEUTIC OUTCOMES

• To follow long-term glycemic control for the previous 3 months, measure A1C at least twice a year in patients meeting treatment goals on a stable therapeutic regimen.

• Regardless of the insulin regimen chosen, make gross adjustments in the total daily insulin dose based on A1C measurements and symptoms such as polyuria, polydip sia, and weight gain or loss. Finer insulin adjustments can be determined on the basis of the results of frequent SMBG.

• Ask patients receiving insulin about the recognition of hypoglycemia at least annu ally. Document the frequency of hypoglycemia and the treatment required.

• Monitor patients receiving bedtime insulin for hypoglycemia by asking about noctur nal sweating, palpitations, and nightmares, as well as the results of SMBG.

• For patients with type 2 DM, obtain a routine urinalysis at diagnosis as the initial screening test for albuminuria. If positive, a 24-hour urine test for quantitative assessment will assist in developing a treatment plan. If the urinalysis is negative for protein, a test to evaluate the presence of microalbuminuria is recommended.

• Obtain fasting lipid profiles at each follow-up visit if not at goal, annually if stable and at goal, or every 2 years if the profile suggests low risk.

• Perform and document regular foot exams (each visit), urine albumin assessment (annually), and dilated ophthalmologic exams (yearly or more frequently with abnormalities).

• Administer an annual influenza vaccine and assess for administration of the pneu mococcal vaccine and hepatitis B vaccine series along with management of other cardiovascular risk factors (eg, smoking and antiplatelet therapy)

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