MEDIBEATS
The Medical Bulletin

In Critical Care

1. Type 1 diabetes (T1D) is an autoimmune disease characterized by pancreatic beta-cell destruction resulting in absolute insulin deficiency. It is best diagnosed by finding a low or undetectable serum C-peptide and one or more positive islet-cell antibodies: glutamine acid decarboxylase (GAD) antibodies, insulin antibodies, islet antigen-2 (IA-2) antibodies, and zinc transporter 8 (ZnT8) antibodies.

2. Type 2 diabetes (T2D) is a heterogeneous metabolic disorder characterized by the pathophysiologic triad of excessive hepatic glucose production, peripheral insulin resistance, and progressive beta-cell failure; other contributing features include increased lipolysis, excessive glucagon secretion, deficient incretin hormone secretion, increased renal glucose reabsorption, and insulin resistance in the brain.

3. Less common types of diabetes include posttransplant diabetes, diabetes resulting from pancreatic insufficiency or pancreatectomy, cystic fibrosis–related diabetes, maturity-onset diabetes of the young (MODY), and medication- induced diabetes.

4. A complete medical evaluation should be performed at the initial diabetes visit to confirm the diagnosis, classify the diabetes, evaluate for complications and comorbidities, review previous treatments and risk factors, and develop a treatment plan.

5. A complete medical evaluation should include past medical and family history, diabetes history, lifestyle factors, medications, vaccinations, technology use, behavioral and diabetes self-management skills, a physical examination, and a laboratory evaluation.

6. Special attention should be given to evaluating medication adherence and self-management behaviors, psycho- social conditions, and social determinants of health (SDOH) because they significantly affect glycemic control and often go undetected.

7. Diabetic ketoacidosis (DKA) is a state of acute metabolic decompensation manifested by significant hyperglycemia, ketonemia, anion-gap metabolic acidosis, and hypovolemia. DKA most commonly occurs in people with T1D but may also occur sometimes in those with T2D and other types of diabetes.

8. Hyperglycemic hyperosmolar syndrome (HHS) most often occurs in elderly people with T2D and is characterized by severe hyperglycemia and hyperosmolality, profound hypovolemia, and absent/minimal ketonemia without metabolic acidosis.

9. Effective DKA management consists of careful attention to each of the following: intravenous (IV) fluid administration, insulin therapy in sufficient amounts, potassium replacement at the appropriate times, bicarbonate therapy when acidosis is severe, and identification and treatment of the precipitating cause.

10. Delayed resolution or recurrence of DKA or HHS may result from premature IV insulin discontinuation, failure to start subcutaneous (SQ) insulin prior to stopping IV insulin, and failure to identify and treat the precipitating cause. Neurologic complications can result from excessively rapid correction of hyperglycemia, resulting in cerebral edema.

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