Type 2 diabetes in children and adolescents - The next epidemic?

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The incidence of type 2 diabetes mellitus in youth (T2DM) has increased worldwide and its incidence rates vary markedly among different racial and ethnic groups. It has a major impact on public health, costing billions of dollars and shortening life expectancy as it has an earlier onset with a large opportunity for complications. As a result, it is important to identify and treat children and adolescents with this disorder. In the early 1990s, T2DM represented about 3% of pediatric diabetes in the United States. By 2003, T2DM represented about 20 percent of pediatric diabetes and nearly half of the cases of diabetes among adolescents aged between15 and 19. The overall burden of diabetes due to type 2 diabetes, in study, increased with age groups from all races and ethnic groups, and among 15-19year old, type 2 diabetes was more common than type 1 diabetes among American Indian Alaskan Native youth. Asymptomatic (about 40%), symptomatic e.g. polydipsia and polyuria without ketonuria or acidosis (about 57-70%), diabetic ketoacidosis (about 5-13%), hyperglycemic hyperosmolar state (uncommon but serious). Obesity, positive family history, specific racial and ethnic groups, female gender, genetic susceptibility and conditions associated with insulin resistance. Prenatal exposure, gestational diabetes and low birth weight are other proposed risk factors. According to The American Diabetes Association (ADA) testing of asymptomatic, children and adolescents for T2DM after the onset of puberty or ≥10 years, whichever occurs earlier, if they are overweight or obese, and have T2DM mellitus in a first or second degree relative, member of a high-risk racial/ethnic group, signs of insulin resistance or conditions associated with insulin resistance (e.g. hypertension, dyslipidemia, acanthosis nigricans, polycystic ovary syndrome (PCOS) or small for gestational age birth weight), maternal history of diabetes or gestational diabetes during the child's gestation and repeating the screening at a minimum of every three years, or more frequently if BMI is increasing. Test for diabetes in patients with typical presenting symptoms, such as polydipsia, polyuria, blurred vision, or weight loss, should be done regardless of risk factors. Hemoglobin A1C (A1C), fasting plasma glucose (FPG), and an oral glucose tolerance test (OGTT) are used. The diagnostic criteria, based upon the guidelines of ADA, are the same as those used in adults. Unless unequivocal symptomatic hyperglycemia is present, the diagnosis should be confirmed by repeat testing on a different day. Considerable overlap exists regarding both insulin resistance and pancreatic autoantibodies. The differentiation is based upon a combination of the clinical presentation and history, supported by laboratory studies. Similarly, T2DM is differentiated from maturity onset diabetes of the yung (MODY). FPG or A1C is used to diagnose the prediabetics, especially in patients with multiple risk factors for T2DM because of its higher sensitivity. For prediabetes annual rescreening for T2DM is recommended unless there is a change in symptoms or signs (e.g. weight change or polydipsia/ polyuria) that need earlier retesting. Prediabetics should be engaged in intensive lifestyle interventions. It has not been established whether metformin should be used in adolescents with prediabetes or with other evidence of insulin resistance. Including hypertension, dyslipidemia, and nonalcoholic fatty liver disease (NAFLD). They may be present before the diagnosis of T2DM, like T2DM of adults, and are associated with excessive weight. The data presented in this presentation were obtained from published literature presented at scientific meetings, clinical trials and review articles using the search term 'type 2 diabetes mellitus', 'metabolic syndrome', 'obesity', 'children', and 'adolescents' in a MEDLINE search from 1995-2018. Additionally, the bibliographies in the identified articles were reviewed.

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