

The Changing Face of Diabetes in America

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KEYWORDS

• Childhood • Diabetes • Obesity • Epidemic • LADA • Autoimmune

KEY POINTS

- Due to the increasing prevalence of childhood obesity and other environmental factors, juvenile-onset type 2 diabetes mellitus (T2DM) is a quickly spreading disease.
- Similar to treatment in adult patients with T2DM, treatment of juvenile-onset T2DM involves oral medications and lifestyle modifications.
- Latent autoimmune diabetes of adults (LADA) manifests clinically like T2DM but has an element of autoimmunity, leaving patients at risk of developing diabetic ketoacidosis (DKA).
- Oral medications for the treatment of LADA work initially, but treatment often requires initiation of insulin therapy early as the disease progresses.

INTRODUCTION

Over the past few decades, consumers have been constantly bombarded with enticements to get bigger food portions, especially via the marketing industry. As a result, the temptation for caloric overload is greater than ever and, unfortunately, so is the growing prevalence of one of America's deadliest diseases, diabetes mellitus. Growing in more ways than one, diabetes is now claiming new classifications, shifts in affected populations, and changes in treatment algorithms.

Diabetes mellitus is an endocrine disorder characterized by dysregulation of insulin production, insulin sensitivity, and glucose control. Centers for Disease Control and Prevention (CDC) data from 2010 indicate that this disorder accounts for more than 37 million ambulatory care visits each year and was listed as the 7th leading cause of death.¹ Diabetes is traditionally classified in 2 subsets: type 1 diabetes mellitus (T1DM), which consists of an autoimmune etiology, and T2DM, which consists of an

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insulin sensitivity problem. Typically, T1DM patients are diagnosed in childhood. They tend to have a lower body mass index (BMI) and are dependent on insulin due to destruction of pancreatic beta cells and subsequent absolute insulin deficiency. T2DM patients are typically diagnosed in adulthood and usually after the age of 40. They tend to have a high BMI and can be managed with oral medications and lifestyle modifications until resistance becomes so high they require insulin for management.

There have been recent discoveries, however, that exhibit changes in diabetic presentations that require further innovative investigation. Latent autoimmune diabetes of adults (LADA) and juvenile-onset T2DM represent some of these changes in the field. Unfortunately, these 2 entities are increasing in prevalence. Due to their atypical presentations, mismanagement can result, especially if an emergency provider is not aware of them.

Because diabetes is associated with both microvascular and macrovascular complications, appropriate diagnosis, referral, and treatment are paramount in assuring that diabetic patients receive the appropriate treatment and referral in emergency departments (EDs) around the country. Despite that diabetes has been researched for many years, downfalls in American diet, physiologic evolution in today's children, and advances in genetic mapping have meant that providers have needed to find new methods of keeping up with the ever-changing faces of diabetes.

JUVENILE-ONSET TYPE 2 DIABETES MELLITUS

T2DM is commonly regarded as a disease of obese adults who have led sedentary lifestyles or have genetic predisposition to developing diabetes. Patients with this disease require a combination of diet, exercise, and medications, either an oral hypoglycemic or parenteral insulin injections, for treatment.

It is unlikely that in the majority of medical school textbooks and medical reference material there is any discussion of T2DM being a rapidly devastating disease of children. There has been, however, a shift in the pathogenesis of T2DM, a disease once relegated to middle-aged and elderly patients, to where it is becoming more commonplace in America's children than anyone ever anticipated. The SEARCH for Diabetes in Youth Study reports that the incidence rate of T2DM in patients between the ages of 10 and 19 is approximately 10 cases per 100,000 person-years.² Although this overall prevalence sounds unimpressive, emergency providers must take note because this marks a greater than 20% increase since the 2001 statistics, making childhood T2DM one of the nation's most aggressively expanding health crises. Although it is still currently behind T1DM in terms of sheer numbers of children affected, T2DM is likely to catch and surpass its autoimmune counterpart in the United States.³ In Japan, the patterns childhood diabetes are beginning to mirror those of adult diabetes in the United States, with T2DM accounting for more than 80% of all of their childhood cases.⁴

Risk Factors

T2DM in childhood has been linked to a host of risk factors associated with maternal health patterns that are present, even preconception. Similarly, as in adult-onset T2DM, the causes of the disease are multifactorial, including a host of environmental factors. The American Diabetes Association asserts that the prevalence of T2DM in a parent of a T2DM child is as high as 90% in some regions of the country.⁵ Other major risks for developing T2DM in children include female gender, lack of exercise, gestational diabetes exposure, and obesity—obesity both in children and in the mother.⁵

Adamo and colleagues⁶ analyzed several studies that positively correlate maternal gestational/preconception health and the risk for development of childhood insulin

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