

Chapter 38

Introduction to Type 2 Diabetes Mellitus



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Diabetes mellitus is a growing global epidemic with a prevalence of 9.3%, affecting 463 million people worldwide [1]. In the United States, 10.5% of the population is estimated to have diabetes, of which 95% have type 2 diabetes mellitus (T2DM). Of the population, 34.5% is approximated to have prediabetes [2]. In 2018 alone, the incidence of newly diagnosed diabetes rose to 1.5 million. Nationally, diabetes is a major cause of premature morbidity and is the seventh leading cause of death [3]. It imposes a heavy burden on healthcare resources, economic costs, and personal quality of life. Diabetes also accounts for 25% of hospital inpatient days and for one in every four US healthcare dollars spent [4].

The increasing prevalence of T2DM mirrors the growing epidemic of obesity in the modern world. Of the US adults with diabetes, 89% are overweight or obese [2]. The underlying pathophysiology of T2DM is insulin resistance and relative insulin deficiency, precipitated by a complex interplay of genetic and environmental factors. Obesity and sedentary lifestyles are prominent causes of peripheral insulin resistance. The subsequent metabolic abnormalities lead to sustained hyperglycemia and chronic inflammation [5]. T2DM may initially be a silent, asymptomatic disease; in fact, 7.3 million US adults are estimated to be unaware of their diagnosis of diabetes. Over time, especially if left uncontrolled, various vascular complications can occur. Diabetes is the primary cause of end-stage renal disease and new-onset blindness in the United States and increases the risk of cardiovascular disease by at least twofold [6].

The prevention and early diagnosis of T2DM are critical to controlling the diabetes epidemic. Regularly testing for diabetes in all adults and, in particular, high-risk populations is recommended. Effective education that empowers the patient and

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leads to weight loss through dietary modifications and increased physical activity is absolutely an essential component to its successful prevention and treatment [7]. Annual screening for microvascular complications and proactive reduction of atherosclerotic cardiovascular disease (ASCVD) risk factors, such as hypertension and hyperlipidemia, are equally essential. Appropriate and timely initiation of pharmacological medications that are tailored to the patient's individualized glycemic targets and comorbidities must be considered.

The following T2DM patient cases describe clinical scenarios commonly encountered in the outpatient office and in the hospital. The recommendations and evidence behind the diagnostic criteria, risk factor modifications, glycemic targets, and inpatient and outpatient management of T2DM are reviewed. The new pharmacotherapy agents, the data behind their cardiorenal protective effects, and the use of continuous glucose monitoring are also discussed. As new therapeutic agents and technology continue to emerge, diabetes care has shifted from a simple HbA1c-driven approach to a patient-centered approach.

References

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