Review Article

All adult diabetes is not type 2 diabetes

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This reader friendly article describes the various types of diabetes encountered in adults. It lists clinical and glucophenotypic tips which help differentiate latent auto immune diabetes of the young (MODY), and pancreatic diabetes from type2 diabetes (2DM). These subtle differences translate into unique treatment plans for these types of diabetes.

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Diabetes is now becoming endemic across the world[1]. The vast majority of persons living with diabetes have type 2 diabetes mellitus (T2DM). The general physician, who deals with a wide variety of medical and non-medical conditions, sometimes tends to view all diabetes as T2DM[2].

Classification of Diabetes :

All adult diabetes however, do not have T2DM. The American Diabetes Association classifies diabetes into four types: type 1 diabetes (T1DM), T2DM, gestational diabetes mellitus (GDM) and others. GDM is easily recognized by its presentation during pregnancy, and is not a differential diagnosis in non-pregnant adults. T1DM may present during adulthood, when it is usually described as LADA (latent autoimmune diabetes of adults. Other non-T2DM frequently encountered in adults are monogenic diabetes [Known as maturity onset diabetes of the young (MODY)] and pancreatic diabetes (due to exocrine pancreatic disease)[3].

Differential Diagnosis :

The primary care physician should keep a high index of clinical suspicion for such atypical diabetes. He or she should be able to suspect these forms of diabetes, based upon history physical findings and glucophenotype[4]. Table 1 provides a simple checklist which should help diabetes care providers differentiate between the various forms of diabetes in adults.

Table 1 — *Diabetes in adults : differential diagnosis*

	Type 1 diabetes	Type 2 diabetes	MODY	Pancreatic diabetes
Etiology	Destruction of beta cell • Immune-mediated • Idiopathic	Insulin resistance and relative insulin deficiency	Impaired insulin secretion; minimal/ no insulin resistance	Destruction of exocrine and endocrine pancreas. Impaired insulin and glucagon secretion
Antibodies	Islet cell, GAD65, IA-2, IA2ß, Zn78 antibodies	Rarely positive	Negative	Negative
Comorbid conditions	Autoimmune disease (Hashimoto's thyroiditis, celiac disease, Grave's disease, Addison disease, vitiligo, autoimmune hepatitis, myasthenia gravis, pernicious anemia)	Overweight/obesity/ central obesity; stigmata of metabolic syndrome (hypertension, acanthosis nigricans, dyslipidemia, NAFLD, hyperuricemia) PCOS	Strong family history (without typical features of diabetes. No e/o metabolic syndrome	Alcoholism, cholelithiasis, drug intake (estrogens), hypertriglyceridemia
Glucose profile	Highly variable	Fasting &/or postprandial hyperglycemia	Mild fasting hyperglycemia predominates	Brittle: both hyper and hypo-glycaemia
Investigations	Ketosis may occur at diagnosis/during stress/ spontaneously	Ketosis occurs only in association with stress of a comorbid illness	Genetic workup	Pancreatic imaging; exocrine function tests
Management strategy	Ideally basal bolus or pump therapy	As per guidelines	Sulfonylurea, insulin	Small frequent doses of insulin

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Therapeutic Implication :

This distinction is important because it facilitates efficient ordering of investigations, appropriate counseling, and optimal therapeutic choices[5]. For example, adults with LADA should be counseled to initiate insulin early on in the course of disease, lowering drugs in a futile attempt to control glycaemia[6]. Persons with MODY may benefit from insulin secretagogues such as modern sulfonylureas[7]. Those with pancreatic diabetes ideally require small, frequent does of insulin, a high vigil for glucagon producing alpha cells) avoidance of incretin based therapy, and possibly pancreatic enzyme replacement.

Summary :

This article lists the clinical and glucophenotypic characteristics of commonly encountered types of diabetes in adulthood. It provides a simple checklist which primary care physicians can use to diagnose and manage diabetes mellitus in an efficient manner.

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