key points

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Autoimmune destruction of the pancreatic beta cells leads to onset of type 1 diabetes (T1D). Although T1D can occur at any age, 85% of patients are diagnosed under the age of 20. Patients usually present with typical features of thirst, polyuria, weight loss and hyperglycaemia, with or without ketosis. In adults, symptoms are similar to those in children but there is a wider differential diagnosis.

Autoimmune diseases cluster together because of a common susceptibility genotype, due to mutations in HLA genes. Around 9.8% of patients with T1D also have hypothyroidism, 4.5% coeliac disease, 4.3% gastric autoimmunity, 2.4% vitiligo, 1.3% hyperthyroidism and 0.2% Addison's disease. Although patients with type 2 diabetes also have an increased risk of hypothyroidism, this is mainly seen in those over 65. The presence of these autoimmune diseases, in the patient or relatives, is highly suggestive of an autoimmune cause of diabetes.

Patients with T1D who are commenced on insulin usually have resolution of their presenting symptoms and regain any weight lost. In those with typical features including young age at diagnosis, personal or family history of immune diseases, positive ketones and positive antibodies (either high titre or multiple positive antibodies), there is little doubt that the diagnosis is T1D and insulin treatment will be lifelong. If patients continue to lose weight, pancreatic disease, i.e. pancreatic cancer or chronic pancreatitis, should be suspected.

The management of T1D can be complex and a full assessment is required to ensure that patients are able to receive an appropriate insulin regimen; undertake blood glucose monitoring and interpret the results; lower the risk of hypoglycaemia, long-term complications and adverse pregnancy outcomes; eat well and drive safely. All patients should be offered a structured education programme of proven benefit within 6-12 months of diagnosis. The programme with the best evidence is DAFNE which has been shown to reduce HbA_{1c} by around 11 mmol/mol, reduce the risk of hypoglycaemia and improve quality of life.

The updated NICE guidelines have moved away from previous guidance suggesting capillary blood testing for most patients with continuous glucose monitoring (CGM) for selected patients to recommending CGM for all patients who will accept it. Studies have shown benefits of CGM in reducing hypoglycaemia (particularly severe or nocturnal) and glycaemic variability; and achieving target HbA_{1c}.

Hypoglycaemia is the main barrier to good glycaemic control. NICE recommends agreeing with the patient an HbA_{1c} target that does not lead to problematic hypoglycaemia. The risk of hypoglycaemia is increased by excessive insulin dose; reduced food intake; exercise; alcohol; recent change in weight, fitness or renal function; recent hypoglycaemic episodes and reduced hypoglycaemic awareness.