Eating disorders and type 1 diabetes mellitus

Hannah Turner

Robert Peveler

The special problems of patients who have both an eating disorder and type 1 diabetes mellitus have been recognized for over 30 years. This contribution will discuss the ways in which eating disorders in such patients differ from those in non-diabetic populations in respect of their clinical features, prevalence, clinical course, and diagnosis and management.

Clinical features

Patients with eating disorders and type 1 diabetes have available to them an additional weight loss strategy: the under-use or omission of insulin leading to 'self-induced glycosuria'. This feature is common, but not universal, in diabetic patients with an eating disorder; it is also seen in up to about 30% of female patients with type 1 diabetes but no eating disorder. The initial effect of this behaviour on body weight is rapid, chiefly as a result of water loss.

Figure 1 lists the common features of eating disorders in people with type 1 diabetes. Strict dieting, binge-eating, vomiting, misuse of laxatives and diuretics and self-induced glycosuria are all likely to impair glycaemic control, although a minority of patients do at times manage to maintain satisfactory control. Alternating periods of raised and lowered blood glucose level may go undetected by biochemical indices such as the glycated haemoglobin test. In the short term, poor control may be manifest as recurrent symptoms of hyperglycaemia (e.g. thirst or tiredness), frequent episodes of ketoacidosis (often requiring hospital admission) or hypoglycaemia (leading to unconsciousness if severe). Growth retardation and pubertal delay may occur in prepubertal children.

Evidence is now accumulating that patients with eating disorders are at considerably increased risk of physical complications of diabetes, including retinopathy, nephropathy or neuropathy,[1]

Hannah Turner *is a Clinical Psychologist at the Hampshire Partnership NHS Trust Eating Disorders Service and a PhD student at the School of Medicine, University of Southampton, Southampton, UK. She did her undergraduate degree at the University of Surrey before completing her clinical doctorate in Oxford. Her research interests include the classification of eating disorders and the development of complex interventions for this clinical population.*

Robert Peveler *is Professor of Psychiatry at the University of Southampton, Southampton, UK, and Honorary Consultant Psychiatrist at the Hampshire Partnership NHS Trust. He qualified in medicine and psychiatry at Oxford. His clinical and research interests are in liaison psychiatry.*

Common signs of disordered eating in young women with type 1 diabetes

- Poor adherence to one or more aspects of the diabetic treatment regimen
- Poor metabolic control as evidenced by high haemoglobin A1c levels
- Recurrent symptoms of hyperglycaemia (e.g. thirst or tiredness)
- Recurrent episodes of diabetic ketoacidosis
- Hypoglycaemia, leading to unconsciousness if severe
- Growth retardation and pubertal delay in prepubertal children

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and that this is associated with high rates of physical morbidity and mortality (Figure 2).

Prevalence

The question of whether clinical eating disorders are more prevalent in patients with type 1 diabetes than in non-diabetic patients has been widely debated. Given that both conditions are relatively common, they would be expected to co-occur by chance frequently. However, there has been a strong clinical impression that eating disorders are over-represented in patients with type 1 diabetes. There are also some theoretical reasons to expect eating disorders to be more common in the diabetic population.

- The non-specific stress of physical illness may increase the risk.
- Insulin therapy may cause weight gain.
- The availability of insulin under-use or omission as a means of weight control, the experience of rapid weight fluctuations around the time of diagnosis and the prescription of rigid dietary regimens may also serve as contributory risk factors.

On the other hand, some factors may reduce the likelihood of developing an eating disorder: patients with diabetes are usually under closer professional and family surveillance, such that problems may be detected and addressed early. The known risks associated with diabetes may also discourage patients from bingeing, vomiting or dieting.

Although the argument that eating disorders are more prevalent in patients with type 1 diabetes appeared to be supported by early research, more recent studies have generated mixed findings. Results from two controlled studies suggest that rates of clinical eating disorders are not increased in the diabetic population,[2,3] but this has not been supported by findings from a large multi-site study, which found that DSM-IV and subthreshold eating disorders were approximately twice as common in adolescent females with type 1 diabetes as in age-matched peers.[4] While it is not possible to be confident that anorexia nervosa and bulimia nervosa occur more frequently in patients with type 1 diabetes, there is a strong suggestion that the prevalence of atypical eating disorders and subthreshold cases may be increased.

Clinical course

There have been a number of longitudinal studies of the clinical course of patients with diabetes and disordered eating. One study, conducted over 4 years, found disordered eating behaviour to be common and persistent in young women with type 1 diabetes, and associated with impaired metabolic control and increased risk of retinopathy.[5]

Two further follow-up studies of community samples have recently been completed.[6,7]

- Results from the 8-year follow-up of adolescents with type 1 diabetes[6] indicated a significant increase in BMI from adolescence to young adulthood; this was associated with a significant increase in body weight concern, shape concern and dietary restraint.
- Findings from a follow-up study of young adults (aged 17–25 years at baseline) found that a quarter of the sample developed psychiatric morbidity and over one-third developed microvascular complications of diabetes, indicating a poor prognosis for many young adults with type 1 diabetes in their 20s and 30s.[7] Such adverse outcomes were often observed even though attempts at treatment had been made.

Short- and long-term complications associated with eating disorders and type 1 diabetes

Short-term

- Hyperglycaemia
- Diabetic ketoacidosis (DKA; often caused by deliberate insulin reduction or omission)
- Hypoglycaemia (often due to food restriction after the administration of insulin)

Long-term

- Retinopathy
- Nephropathy
- Neuropathy
- Osteoporosis
- Cardiovascular disease

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Diagnosis and treatment

Identification

Although some patients with diabetes will volunteer information about eating disorder psychopathology, factors such as ambivalence, denial, guilt and shame will lead many to be secretive about any problems they might have with their eating. Thus, the first step in management is successful detection. Poor metabolic control, repeated episodes of hypoglycaemia or ketoacidosis and weight fluctuations are important indicators of risk and their presentation should prompt sensitive but direct questioning relating to eating habits and attitudes, concerns about body weight and methods of weight control (Figure 3).

The potential for eating disturbance should be borne in mind particularly when working with patients who are most at risk – adolescent and young adult females. Screening questionnaires such as the SCOFF[8] may assist in the process of detection, but a clinical interview is required to ascertain case status. In most instances, it is desirable for specialist eating disorder teams to liaise closely with diabetes services. Only if good communication can be established and maintained is treatment likely to be optimal.