Diabulimia: A Body-Image Disorder in Patients With Type 1 Diabetes Mellitus

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Diabulimia is a recently recognized eating disorder among persons with type 1 diabetes mellitus. The term, which combines the terms diabetes and bulimia, relates to deliberate avoidance or limitation of insulin administration for the purpose of normalizing or reducing body weight. This practice can be fatal, or at the very least may result in poor metabolic control, delayed growth, recurrent diabetic ketoacidosis (i.e., dangerously high ketone level), and earlier onset of diabetes-related complications, such as kidney failure and retinopathy. This dangerous practice of inducing glycosuria (i.e., glucose in the urine) is common in females, which has a reported prevalence as great as 39% of females with type 1 diabetes.

The National Athletic Trainers’ Association (NATA) published a position statement in 2007 concerning management of type 1 diabetes mellitus in the physically active population. The prevalence of type 1 diabetes in athletes is not known, but eating disorders are known to be prevalent, and diabulimia is similar to anorexia and bulimia. Diabulimia has been recognized in the Diagnostic and Statistical Manual of Mental Disorders (4th ed.) as an “inappropriate compensatory purging behavior,” which is included under “misuse of medications for weight loss” in the criteria for bulimia nervosa and eating disorders not otherwise specified. Awareness of the condition among health care professionals is a recent development. The purpose of this report is to raise awareness among athletic trainers and therapists who work with patients who have type 1 diabetes.

Type 1 Diabetes

The goal type 1 diabetes mellitus management in an athlete is to maintain a consistent blood glucose level within a normal or near-normal range, i.e., avoidance of hypoglycemia (low blood glucose levels) or hyperglycemia (high blood glucose levels). When the insulin level is low, the body loses the capability to convert glucose to energy and seeks energy from fat. Until the insulin level is returned to normal, ingested glucose cannot be utilized and is expelled through the urine. Key signs and symptoms of diabetes are lowered insulin level, weight loss, and sugar in the urine. The patient with type 1 diabetes is treated with regular insulin replacement, which is self-administered. Because insulin administration can cause weight gain, some patients may refrain from administrating a full dose, i.e., injecting just enough to prevent a hyperglycemic condition from developing.
Ketoacidosis can develop when insulin administration is severely restricted, which can result in coma (with associated blindness), kidney failure, neuropathy (associated with risk for necessity of limb amputation), and death. Although this population does marginally control glucose level, they may be ignoring the long-term effects of this dangerous practice. The symptoms of ketoacidosis do not develop immediately unless an extremely low insulin dose is administered, but they are likely to develop as the condition progresses. Skin complications and depression may be manifested.

**Etiology of Diabulimia**

Type 1 diabetes is typically diagnosed during puberty, when young girls are experiencing hormonal changes. During this period, weight gain is normal. Adolescent females with type 1 diabetics are 6.8 kg heavier than nondiabetic female adolescents. Female athletes often do experience body image dissatisfaction. In addition to insulin-related weight gain, the process of injecting the insulin can cause bruising and/or create “lumpiness” that is perceived as unattractive. Rydall et al. reported that young women with diabetes admitted binge eating (45%), dieting for weight control (38%), self-induced vomiting (8%), and laxative abuse (2%). Additionally, 14% admitted purposeful omission of prescribed insulin administration as a means of weight control.

**Type 1 Diabetes and Physical Activity**

The benefit of physical activity for a young person with type 1 diabetes has been somewhat controversial in the past. A recent study conducted by the Juvenile Diabetic Foundation found activity to be a key factor for maintenance of an optimal blood sugar level. Hence, young individuals with diabetes are encouraged to participate in sports. Strategies for management of athletes with type 1 diabetes are outlined in the NATA’s position statement, which addresses items to have available in a medical kit, preparticipation examination components, and travel recommendations. The reader is encouraged to review this detailed information, but it does not address diabulimia.

Athletes are often encouraged to lose weight. Athletes with type 1 diabetes experience greater difficulty with weight control than non-diabetic individuals. Weight fluctuation associated with type 1 diabetes may mask diabulimia. Table 1 (adapted from “Eating Disorders in Teens with Type 1 Diabetes”) presents warning signs that an athlete may be practicing diabulimia. Distinguishing between an athlete who is practicing diabulimia and one who has disordered eating habits is difficult.

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<tr>
<th><strong>Table 1. Warning Signs of Diabulimia</strong></th>
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<td>Preoccupation with body image, weight, or food intake.</td>
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<td>Poor metabolic control despite the appearance of compliance.</td>
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<td>Signs of hyperglycemia such as fatigue, excessive thirst, excessive urination, unusually high blood sugar.</td>
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<td>Moodiness, being overly critical of one’s appearance, anxious or depressed, irritable, self-hatred.</td>
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**Summary**

The availability of research on diabulimia is extremely limited. A Medline search of the term diabulimia yielded only one news article. Further research is needed, especially in the physically active population. Although diabulimia primarily involves females, eating disorders are also prevalent in males. The dangerous practice of deliberately avoiding or limiting administration of insulin intake as a means of weight management is considered an eating disorder by the American Psychiatric Association. Monitoring the metabolic health of athletes with type 1 diabetes mellitus is essential to recognize the condition and to ensure effective blood glucose management.

**References**