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## DIFFERENCES BETWEEN BULIMIA NERVOSA AND BINGE-EATING DISORDER IN FEMALES WITH TYPE 1 DIABETES: THE IMPORTANT ROLE OF INSULIN OMISSION

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**Abstract**—This study explored the differences between bulimia nervosa (“BN,” n=22) and binge-eating disorder (“BED,” n=11) in type 1 diabetic females and the factors most predictive of poor glycemic control in patients suffering from these disorders. These two groups and a control group without eating disorders (n=32) were compared across a number of demographic, psychological, and medical variables. BN manifested significantly more severe disturbances related to eating disorders, depression, anxiety, a higher rate of co-occurring mental disorders, and poorer psychosocial functioning compared with BED. BN also showed poorer glycemic control. Multivariate analysis indicated that higher serum glycosylated hemoglobin (HbA1c) levels were most associated with the presence of severe insulin omission in type 1 diabetic females with binge eating. Clinicians may be able to determine the psychological/medical severity of illness in these patients by identifying the presence of compensatory behaviors to prevent weight gain such as severe insulin omission, as described in the DSM-IV. © 1999 Elsevier Science Inc.

**Keywords:** Binge eating; Bulimia; Depression; Eating disorders; Insulin omission; Type 1 diabetes mellitus.

### INTRODUCTION

In Japan, as in North America and Europe [1, 2], development of disordered eating is not unusual in young females with type 1 diabetes [3, 4]. Although no one questions the devastating effect of eating disorders on the clinical course of diabetes [5–10], the clinical characteristics of these co-occurring patients have not been sufficiently clarified, making successful intervention exceedingly difficult [11]. Classification according to the severity of psychological/behavioral disturbances and medical consequences may be helpful in gaining a clearer understanding of the problems involved in treating these patients, and, thus, lead to more effective treatments.

The high prevalence of binge eating and its severe influence on metabolic control make it one of the most serious eating problems for type 1 diabetic patients [6, 11, 12]. Some binge eating type 1 diabetic patients meet the diagnostic criteria for bulimia nervosa, but others do not, mainly because of the absence of recurrent “inap-

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appropriate compensatory behavior in order to prevent weight gain" (ICB) [13, 14]. However, there has been little systematic research comparing these two groups. Only Affenito *et al.* [15] have reported the relationship of subclinical and clinical eating disorders to serum glycosylated hemoglobin (HbA1c) values, but they did not compare the two groups in depth from the psychological/behavioral aspect. Furthermore, they found no significant difference in glycemic control between the two groups. The main purpose of this study, therefore, is to compare females with type 1 diabetes who meet all the diagnostic criteria for bulimia nervosa to others who do not.

Recent research has reported the importance of insulin omission and its relation to disordered eating and poorer medical consequences [9, 16, 17]. Insulin omission is often used for the purpose of weight loss by females with type 1 diabetes. DSM-IV diagnostic criteria [14] for bulimia nervosa has, for the first time, accepted insulin omission for ICB, which is necessary for the diagnosis of bulimia nervosa. As there is a broad spectrum of methods for insulin omission, however, the significance of insulin omission varies in individual patients because of differences in such factors as frequency, dose, and motive. Examining these factors in type 1 diabetic patients with eating disorders appears to be important to explore the relationship between the insulin omission and the eating disorder.

Although females with type 1 diabetes and eating disorders seem to have a number of general psychological/behavioral and eating-related problems, there have been few studies comparing the magnitude of the influence of each problem on the medical consequences of their diabetes. There is a good possibility that psychological/behavioral factors proven to be highly associated with poorer glycemic control will become meaningful indices for assessment and treatment.

This study was designed to address the following questions concerning the psychological/behavioral and medical characteristics of females with type 1 diabetes and binge eating:

1. How do those who meet DSM-IV criteria for bulimia nervosa differ from those who do not in terms of disordered eating attitudes and behaviors, general psychological disturbances, and medical consequences of diabetes?
2. Which psychological/behavioral factors are most predictive of elevated HbA1c in females with type 1 diabetes and binge eating?

## METHOD

Subjects included 33 females with type 1 diabetes mellitus and binge eating (age 16–36 years) referred from June 1994 to February 1998 to the Department of Psychosomatic Medicine, Graduate School of Medical Sciences, Kyushu University for treatment of disordered eating and type 1 diabetes. All had been diagnosed with type 1 diabetes for at least 1 year. Twenty-eight of the 33 patients were referred from the Diabetes Center at Tokyo Women's Medical College and the other five patients were from other hospitals. "Binge eating" was defined according to the DSM-IV diagnostic criteria for bulimia nervosa: (1) the consumption of a large amount of food; (2) loss of control over the eating at the time; and (3) binging at least twice a week for 3 months. A large amount of food was defined as the consumption of  $\geq 500$  calories at one sitting, not as part of a regular meal or for its nutritional value [12].

At the first visit to our out-patient clinic, each patient underwent a diagnostic interview to be placed into one of two groups according to whether or not their symptoms met the DSM-IV diagnostic criteria for bulimia nervosa. The diagnostic interview followed a format based on DSM-IV criteria for eating disorders: a modified module of eating disorders in the Structured Clinical Interview for DSM-III-R [13] (SCID-P) [18]. The "BN" group ( $n=22$ ) was comprised of patients with type 1 diabetes and bulimia ner-

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