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An integrated inpatient therapy for type 1 diabetic females with bulimia nervosa
A 3-year follow-up study

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Abstract

Objective: To describe an "integrated inpatient therapy" for type 1 diabetic patients with recurrent binge eating and to assess its effectiveness for females with bulimia nervosa (BN). **Methods:** At the first visit to our outpatient clinic for treatment of an eating disorder and diabetes, type 1 diabetic females with BN underwent single session "outpatient counseling." All patients then returned to the referring physician for further treatment and observation. None of the BN patients had the minimum expected 1% fall in HbA1c and all were therefore encouraged to undergo our "integrated inpatient therapy." However, only patients accepting inpatient treatment on their own volition were admitted. An "INPATIENT" group ($n=9$) consisted of those who underwent inpatient therapy and had a 3-year follow-up period after discharge. The clinical course was assessed by the HbA1c and BMI course and by comparison of psychological/behavioral factors between baseline and follow-up. For reference, the clinical course of a "NON-INPATIENT" group ($n=10$), who did not have the inpatient therapy for at least 2 years after first visit, was also assessed. **Results:** The "INPATIENTs" had significantly lower HbA1c; lower psychological test scores related to eating disorder psychopathology, depressiveness, and anxiety-proneness; a reduced frequency and amount of binge eating; and fewer patients exhibited purging behaviors at follow-up than at first visit. At follow-up, seven (78%) "INPATIENTs" no longer fulfilled any criterion for clinical or subclinical eating disorders. The "NON-INPATIENTs" had no significant improvement. **Conclusion:** The findings give interesting insights into the possibilities of "integrated inpatient therapy" as an effective treatment for type 1 diabetic females with BN.
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Keywords: Binge eating; Bulimia; Eating disorder; Psychotherapy; Type 1 diabetes

Introduction

Over the past two decades, a large number of studies have focused on type 1 diabetes concurrent with eating disorders [1–12]. Development of disordered eating is not unusual in young females with type 1 diabetes, and it leads to poor metabolic control and a higher rate of subsequent long-term complications [1–5].

Although little is known about the natural course of eating disorders in patients with type 1 diabetes, one study has shown that a variety of pathological behaviors related to eating disorders became more frequent during a follow-up period of 4 years [4]. Another study has shown that the eating disorders of diabetic patients tended to persist over 2 years of follow-up [9].

Previous studies have indicated the difficulties in dealing with these patients and the urgent necessity to develop effective treatments [2,3]. However, interventions specifically for these patients have rarely been studied. To date, only case studies have focused on treatment of diabetic patients with clinical eating disorders [10–12]. Among the studies, only Peveler and Fairburn [12] provide a detailed

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description of management and outcome, reporting the treatment of a series of six females with type 1 diabetes and bulimia nervosa (BN) using modified cognitive behavioral therapy (CBT) for BN [13], mainly on an outpatient basis. Although the treatment usually resulted in improved eating habits and glycemic control, the success rate was lower than in nondiabetic BN patients. Moreover, the improved glycemic control of their patients seems to have been insufficient to prevent long-term complications. Thus, a number of questions remain unresolved as to the development of effective treatments for these difficult patients.

The high prevalence of binge eating and its severe influence on metabolic control make it the most serious eating problem for type 1 diabetic patients [14]. In a recent study regarding the clinical characteristics of type 1 diabetic females with binge eating [5], we reported that patients with BN according to DSM-IV [15] clearly showed more severe psychological and medical pathology than patients with binge-eating disorder (BED). This finding of pathological difference may be useful for developing a comprehensive treatment system for patients with recurrent binge eating that allows intervention to be tailored to the pathological severity of the individual patient.

The Department of Psychosomatic Medicine at Kyushu University has a long history of treatment of patients with eating disorders, with patients referred to the department from throughout Japan. Kyushu University is the only hospital in Japan with a department specializing in the treatment of patients with an eating disorder concurrent with diabetes. A great majority of the BED patients we have seen significantly improved their eating pathology and glycemic control with a single session of our ''outpatient counseling at first visit'' as a turning point, which will be reported in detail in a future study. In contrast, no BN patients have had sufficient improvement with this intervention and all eventually needed inpatient treatment.

''Integrated inpatient therapy'' was developed for patients who were not sufficiently responsive to the first visit counseling. The primary aim of this study is to describe the inpatient therapy and to assess its effectiveness for patients with BN. We hypothesized that most patients with BN would be responsive to this inpatient therapy. If this hypothesis proves true, combining ''outpatient counseling at first visit'' and ''integrated inpatient therapy'' would create a more systematic therapy than is presently available for type 1 diabetic patients with concurrent BN or BED.

Methods

Subjects were 19 BN patients selected from 43 consecutive type 1 diabetic females with recurrent binge eating (25 BN patients, 16 BED, 1 eating disorder not otherwise specified, and 1 anorexia nervosa) referred to the Department of Psychosomatic Medicine, Graduate School of Medical Sciences, Kyushu University from June 1994 to July 1998 for treatment of disordered eating and type 1 diabetes.

The diagnosis of BN was made according to a diagnostic interview that followed a format based on DSM-IV criteria, a modified module of BN in the Structured Clinical Interview for DSM-III-R (SCID-P) [16]. Subjects were selected according to the following participation criteria. (1) Diagnosed with type 1 diabetes for at least 1 year. (2) At least 2 years absence of ''integrated inpatient therapy'' after the first visit for the ''NON-INPATIENT'' group, or at least 3 years of follow-up after inpatient therapy for the ''INPATIENT'' group.

The criteria for BN include binge eating and ''inappropriate compensatory behavior in order to prevent weight gain'' (ICB) at least twice a week for 3 months. Binge eating was defined as (1) the consumption of a large amount of food and (2) loss of control over eating at the time. A large amount of food was defined as the consumption of >500 cal at one sitting, not as part of a regular meal or for its nutritional value [14]. DSM-IV for the first time recognized insulin omission by patients with diabetes as an ICB. However, insulin omission is very common and is not specific to eating-disordered type 1 diabetic females [17]. In this study, insulin omission as an ICB was defined as omission of more than one in four injections or the whole prescribed dosage of insulin to prevent weight gain.

Subjects were divided into two groups: (1) an ''INPATIENT'' group, comprised of those with BN who underwent the inpatient therapy and had a 3-year follow-up period, $n=9$; and (2) a ''NON-INPATIENT'' group comprised of those with BN who did not undergo the inpatient therapy for at least 2 years after the first visit, $n=10$. Of the ''INPATIENTs,'' two underwent inpatient therapy twice because the first admission was interrupted by severe homesickness in one and by impulsive behaviors in the other. Because inpatient therapy was mainly conducted in the second admission, we counted only the second as the inpatient therapy. The average duration of inpatient therapy was therefore 112.3 ± 51.4 days.

Baseline assessment

Baseline assessment was done at first visit to our outpatient clinic.

Serum glycosylated hemoglobin (HbA1c) levels were measured by high-performance liquid chromatography; the normal range in our laboratory is 4.3–5.8%. Height and weight were measured and BMI was calculated.

Psychological and behavioral traits common to eating disorders, degree of depression, and anxiety-proneness were assessed using the Eating Disorder Inventory (EDI) [18], the Zung Self-Rating Depression Scale (SDS) [19], and the Trait-Anxiety Scale of the State-Trait Anxiety Inventory (STAI) [20], respectively. In each of these psychological measures, higher scores indicate more severe psychopatho-

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