



Original article

A 3-month at-home tube feeding in 118 bulimia nervosa patients: A one-year prospective survey in adult patients



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SUMMARY

Background & aims: To study the 1-yr follow-up of 118 bulimia nervosa (BN) patients after a 3-month at-home tube feeding (TF) in a prospective study.

Methods: At-home TF lasted 3 months, including one month of exclusive TF (no food). All patients fulfilled 4 questionnaires (score of binge/purging episodes (BP), eating disorder inventory, anxiety, depression), before, at the 3-month TF point, and 6 and 12 months latter.

Results: The score of BP episodes dramatically decreased from 28.8 ± 15 (before TF) to 7.3 ± 5.4 at 3 months, as well as at 1 yr (15.1 ± 6.2). We also obtained a 50% decrease in Beck score (depression) and Hamilton score (anxiety). Curiously, there was no difference between the BP scores of the patients following psychotherapy and those who did not, despite lower scores for anxiety and depression.

Conclusion: In conclusion, in bulimia nervosa patients having normal BMI and purging behavior, home-TF allow to obtain total withdrawal from bingeing/purging in at least 75% of the cases at short term (3 months) and in 25% of the patients at one year, whatever the patients have or have not psychotherapy.

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1. Introduction

Bulimia nervosa (BN) is a chronic and often severe eating disorder, which occur in both adolescents and young adults.^{1–4} It is characterized by a normal body mass index (BMI), binge eating episodes and compensatory behaviors to eliminated these binges, namely self-induced vomiting. In France, its estimated frequency is around 4% in young women.⁵ It occurs rarely in men: less than 2% of our 308 last cases of BN were men. BN (i.e. with normal BMI) is one of the disorder which followed-up anorexia nervosa (AN): in our cohort of 487 AN patients followed more than 10 years, 16% converted to BN, after having switched to the binge-eating/purging form of AN.⁶ In BN patients, deviant attitudes and perception concerning body weight and body shape still remain as strong as in AN patients. Unrelenting obsession of fatness and slimming diet persists.^{1–3} The most severely diseased patients suffer from numerous binge eating/vomiting episodes each day, even until the middle of the night. The fear of being fat leads the patients to provoke several vomiting per day (purging), during each binge but also sometimes at the time of a normal food intake. Moreover,

numerous patients skip meals every day and/or engage themselves into fasting for 1–3 days. These behaviors are responsible for nutritional deficiencies and malnutrition,^{7,8} but also for depression, feelings of loss of control, inefficiency and anxiety.^{9,10} The dysfunctional thought, estimated by the eating disorder inventory (EDI), is correlated with the severity of depression in AN and BN patients.^{11,12}

In one half of ambulatory BN patients, abstinence from binge-eating/vomiting episodes is difficult to obtain.^{1,12–14} In BN outpatients, cognitive-behavior therapies (CBT) have been shown to reduce the frequency of episodes in controlled studies in 50–70% of the cases.^{14–16} But CBT is not available in most of the towns in France and elsewhere. Double-blind studies have shown that antidepressants are also effective in BN, but only in one half of the patients, and often only after 3 weeks.^{17–19} Furthermore, in some patients, a fading effect was observed after 4–6 months. Until now, physicians still have no evidence-based medicine guidelines for treatment of daily binge eating/vomiting (BP) episodes in those patients, who are not improved by CBT or by antidepressant drugs. In a previous randomized trial, we showed that tube feeding (TF) was able to more frequently allow abstinence from BP episodes in at-home BN patients, compared to CBT alone.²⁰

Thus we carried out an open prospective study to analyze the 1-yr follow-up of 118 ambulatory BN patients having a severe form of the disorder. Our aim was to study if a 3-month at-home TF was

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able itself to reduce the frequency and the intensity of BP episodes in patients who did not benefit of CBT.

2. Patients and methods

2.1. Patients

The women enrolled in the present study were adult outpatients suffering from BN, i.e. having binge eating and purging behaviors (BP) and normal BMI (18.5–25 kg/m²). BP was characterized as following (DSM-IVR): 1- eating, in a discrete period of time (e.g., within any 2-h period), an amount of food that is definitely larger than most people would eat during this period of time and under similar circumstances, 2- a strong feeling of lack of control over eating during the episode (“I can’t stop eating”), 3- numerous self-induced vomiting during the binges, in order to prevent weight gain. The characteristics of the patients are shown in Table 1. They accepted to have a 1-yr follow-up. All the patients had a hard need to loss body weight, despite normal BMI, an intense fear of becoming fat, a strong disturbance in the way one’s body weight or shape are experienced, and an undue influence of body shape on their self evaluation. All the patients had menstrual cycles. The ethical committee of the Dijon’s hospital has approved the study. The procedure of TF and its side effects were fully explained to the patients, who had 2 weeks to accept and give their written informed consent.

Criteria for inclusion were: 1- ≥ 5 BP episodes/week; 2- BN duration > 2 years; 3- poor improvement ($< 20\%$ decrease in BP frequency) despite 3-month psychotherapy and/or use of antidepressant drug. Criteria of non inclusion were: 1- age < 18 years ($n = 4$), men ($n = 2$); 2- serious concurrent psychiatric disorders (semi-structured interview; $n = 11$); 3- drug or alcohol abuse ($n = 4$); 4- suicide attempt during the last year ($n = 7$); 5- refusal to take part in the trial ($n = 18$); 6- inclusion in another study ($n = 3$); 7- current treatment with CBT or improvement during the last 4 weeks ($n = 15$). Thus, during the period of inclusion (1.8 year), 118 patients were considered for inclusion and 64 were not.

2.2. Medical care

The following treatments were prescribed: 1- TF: it was associated with diet counseling, as well as work on diet and nutritional

needs in a cognitive way. Diet counselling consisted in energy, protein and mineral advice as required, and in allocation into 3 meals and often one snack. Informations were given, before TF, on weight stimulus control, energy need for maintaining normal body weight with an appropriate diet, need to appropriate energy and protein input to stop BP episodes, dysfunctional thoughts, beliefs and emotional rescues, as described by Wilson, Fairburn and Agras.²¹

3. Methods

3.1. Run-in phase

Patients answered twice to a structured interview on their BP episodes and their purging episodes at a 2 week-interval: four patients were not included, because of a $> 20\%$ decrease in BP episodes. Thus 114 patients were treated using at-home TF.

3.2. Active phase of treatment

A 7–8-inch nasogastric tube (1.0–1.2 mm) was positioned near the pylorus and its position controlled by air and X-ray. TF was prescribed for 3 months. During the first 4–6 weeks, “exclusive TF” was prescribed (no meal was allowed, in order to break down the vicious circle of binge eating). After this exclusive-TF period, meals were reintroduced, beginning with the breakfast, then the lunch (after 2–4 days), then the dinner (after 3–6 days). During this second phase (6–8 weeks), the energy load by TF was decreased according to the increase in energy load by meals. Our aim was to stabilize the body weight or to obtain a maximal 2-kg weight loss: the total energy intake which was prescribed was equal to the resting energy expenditure $\times 1.5$ in non-hyperactive patients and to REE $\times 1.7$ in hyperactive ones. REE was calculated from the Harris and Benedict formula. The patients were instructed to never remove the nasogastric tube. The mixture was isoenergetic iso-proteic ones (such as Sondalis iso[®]).

3.3. Follow up

After 3 months, the nasogastric tube was removed. The patients continued to receive dietary advises thereafter. The follow-up lasted 12 months, with medical visits every 3 months. Serum electrolytes, albumin, transthyretin, complete blood count, liver enzymes, iron, ferritin were done at 0 and 3 months.

3.4. Efficacy

The main goal for efficacy was abstinence from BP episodes. Secondary goals were a 75%-decrease in BP score and frequency, improvement in quality of life, and decrease in depression and anxiety scores. Evaluations were performed at one week, 3 months (end of TF), then 3, 6 and 12 months thereafter.

Questionnaires: Semi structured interviews were done, using 4 instruments:

- 1 Our BP questionnaire including the frequency of BP episodes/week, their duration (hr/day) and their intensity. The duration was estimated on a 4-point scale: ≤ 1 h = 1.0; 1.1–2.0 h = 1.4; 2.1–3.0 h = 1.6; > 3 h = 2.0. The intensity was also estimated on a 4-point scale: 1 = volume less than one normal meal, 1.4 = similar to a “normal meal”, 1.6 = more than one normal meal, 2.0 = largely more than one normal meal. The BP score was calculated as follow: frequency (n/week) \times duration \times intensity, and for intensity: “1” = 1; “2” = 1.4; “3” = 1.6; “4” = 2.0. So if the patient had 2 BP episodes/day of a mean duration of 1 h $\frac{1}{2}$, eating

Table 1
Characteristics of the patients at inclusion in the 3-month home TF treatment.

Bulimia nervosa patients	Psychotherapy ($n = 61$)	No psychotherapy ($n = 57$)
Age (years)	26.7 \pm 6.4	28.6 \pm 6.6
Duration of any eating disorder (years)	6.4 \pm 3.8	7.7 \pm 3.1
Previous stays in hospital (number)	1.2 \pm 0.4	1.4 \pm 0.3
BMI before eating disorder (kg/(m ²))	19.8 \pm 4.0	20.5 \pm 3.2
Lowest BMI (kg/(m ²)) in the past	14.8 \pm 2.7	15.9 \pm 2.4
Anorexia nervosa (AN) before	26%	21%
Present BMI	22.2 \pm 2.4	21.4 \pm 2.0
Present body weight (kg)	61.5 \pm 6.2	58.4 \pm 5.8
Antidepressant drugs (% patients)	49%	44%
Number of binges/week	17.3 \pm 10.9	18.5 \pm 14.3
Binge intensity (scale from 0 to 4)	3.02 \pm 0.45	3.18 \pm 0.65
Binge duration per day	2.2 \pm 1.2	1.9 \pm 1.0
BP score: mean \pm SD (median; extr)	33.8 \pm 25 (19.3; 10–83)	24.1 \pm 19.6 (17.6; 8–73)
Depressive mood (Beck score; max: 39)	19.8 \pm 4.5	21.1 \pm 4.1
Anxiety (Hamilton score; max: 56)	26.7 \pm 6.4	25.8 \pm 5.2

Mean \pm SD. No difference between the 2 groups. BP score: score of binge eating/purging episodes (number/week \times duration (0–2) \times intensity (0–2); see methods). Depression defined as Beck score > 15 ; anxiety as Hamilton score > 21 .

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