Review Article

Aspects of bulimia

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The abnormal craving for food that results in gorging followed by induced vomiting is called bulimia. From its relatively innocent origin as a simple method of controlling weight, the condition may progress to a compulsive, uncontrollable habit that can be life-threatening in its later stages. The author discusses the psychiatric and physical symptoms, and presents a case report and review of the literature.

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Growing numbers of young women and men are resorting to vomiting as a weight-control measure. This secretive behavior, unfortunately, is becoming popular on college campuses. In a recent survey of a college population, Halmi et al[1] found that 13% of these young people experience the major symptoms of bulimia and that 87% are females. During the last few years there has been an increase in the number of college students seeking treatment for bulimia.[2]

Bulimia is an abnormal craving for food that results in gorging followed by induced vomiting.[3] Food, often high calorie junk food, is consumed so rapidly that it is not properly chewed. The gorging episode then generates guilt and anxiety and the cycle begins again.

Bulimia is not a disease in itself but a manifestation of underlying psychological problems. Most people who have bulimia are greatly concerned with their weight and have made repeated attempts to reduce, either by dieting or using cathartics, diuretics, or diet pills. Many bulimic persons undergo frequent weight fluctuations due to alternate gorging

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and fasting. However, long periods of fasting actually increase hunger by inducing hypoglycemia, resulting in another binge and the cycle continues. Thus, although vomiting may have started as a substitute for dieting, this seemingly benign habit may become malignant to the point that it completely controls the individual's life. Among young adults, frustration may lead to severe depression, resulting in substance abuse, most frequently alcohol, and occasionally amphetamines or barbiturates. The cost of this habitual excessive food intake is enormous and based on reports of my patients would be estimated to cost $8 to $10 per binge, four or five times a day, a minimum of $40 to $50 daily. Some bulimics resort to shoplifting, forgery, selling drugs, or prostitution to finance these binges.

The onset of the disorder is usually during adolescence or early adult life when appearance and sexual attractiveness are of utmost importance. Symptoms might continue for many years, alternating with periods of normal eating and behavior. The disorder may even be hidden from one's spouse by subterfuge, such as vomiting in the bathroom with the water running noisely.

Case report

A 17-year-old white girl was brought to the Cleveland Clinic for consultation because of episodes of gorging followed by excessive vomiting after almost every meal for the last two years. Episodes were as frequent as three or four a day and began affecting her performance in school. She had been an excellent student, but during the last year she was unable to study and her grades deteriorated. She began staying at home and refused to go out with friends. She became nervous and tense and could not stand criticism from her family. During the last year she had managed to lose about 10 pounds, but some swelling appeared under both ears, making her look fatter than ever. Occasionally she had swelling around her ankles and puffiness around her eyes. During the last year she had frequent caries and gum disease necessitating extensive dental treatment.

She resented being forced to see a psychiatrist and claimed that there was nothing wrong with her, that vomiting was just a way of watching her weight. She pointed out that her mother and sister were overweight and looked disgusting to her; she did not want to look like them. She denied needing treatment and said if it had not been for the pressure of her parents, she would not have come for consultation. However, as the interview continued it became evident that she might be willing to accept help if it involved a solution for controlling her weight. She admitted that gorging and vomiting consumed too much time—she thought about food all day long and could barely concentrate on her studies or anything else. She could not go out to eat because she needed time for vomiting and feared her friends would find out. She admitted feeling bad about herself. Although a good student, she did not believe she had the intelligence to accomplish much in life. She was obsessed with her appearance and the latest fashion. Constantly trying to rise to the expectations of her peers, frustrated and depressed, she resorted to alcohol, occasionally getting drunk. In the past, she had tried to lose weight by using amphetamines and over-the-counter diet pills. Recently, in addition to vomiting, she began taking large doses of laxatives.

Medical complications

Bulimia often results not only in social isolation and academic failure but also in severe nutritional and physical deficiencies (*Table 1*). Frequent episodes of overeating and vomiting can lead to severe weight loss. In women, a loss of more than 25% of the original body weight usually results in anorexia nervosa. This is often followed by anorexia nervosa combined with bulimia, often called bulimia nervosa[4] or bulimarexia. Subsequent severe protein and caloric malnutrition can affect the immunological system increasing susceptibility to infection. Liver function tests may indicate hepatic damage with an occasionally higher level of bilirubin in the blood.

Excessive vomiting also leads to enlargement of the parotid glands. Bulimics may look as if they are suffering from mumps.[5] They often sustain severe destruction of tooth enamel from vomitus as well as sugar.[6] One of my patients spent thousands of dollars in one year on dental care. Her entire, substantial salary was spent on food, dental care, and psychotherapy.

Pressure on the abdomen to induce vomiting may result in hernia, either femoral or hiatal. Two of my bulimic patients in a period of one year developed hiatal hernia after excessive induced vomiting.

Excessive vomiting may also result in conjunctival hemorrhages or bleeding from another part of the

Table 1. Medical complications of bulimia

Organ	Complication
Gastrointestinal tract	Pharyngitis
	Esophagitis
	Gastritis
	Enlargement of parotid glands
Teeth	Decay in teeth, gum disease
Blood	Severe hypokalemia
	Other electrolyte disturbances
	Severe dehydration
	Hypotension
Heart	Arrhythmias
	Cardiac arrest
Genitourinary	Irregularity of menstruation; amenorrhea
	Inability to concentrate urine resulting in general edema
	Polydypsia
	Polyuria
Skin	Bruises and lacerations over the knuckles
	Ecchymoses on face and neck
	Stretch marks due to fluctuations in weight
Eyes	Hemorrhages in conjunctiva
Liver	Abnormality in liver function

Table 2. DSM-III* Diagnostic Criteria for Bulimia

A. Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period of time, usually less than two hours)
B. At least three of the following:
   1. Consumption of high-caloric, easily ingested food during a binge
   2. Inconspicuous eating during a binge
   3. Termination of such eating episodes by abdominal pain, sleep, social interruption or self-induced vomiting
   4. Repeated attempts to lose weight by severely restrictive diets, self-induced vomiting or use of cathartics or diuretics
   5. Frequent weight fluctuations greater than 10 lb due to alternating binges and fasts
C. Awareness that the eating pattern is abnormal and fear of not being able to stop eating voluntarily
D. Depressed mood and self-deprecating thoughts following eating binges
E. The bulimic episodes are not due to anorexia nervosa or any known physical disorder

* Diagnostic and Statistical Manual of Mental Disorders, 3rd ed, 1980. (With permission of the publisher.)

face. Conjunctival hemorrhages are often seen in bulimic patients and should alert an examining physician to the problem. Esophageal irritation may cause bleeding or spotting in the vomitus. Bloody bruises are often seen on the knuckles from inducing vomiting with the fingers. Rectal bleeding is not uncommon among those resorting to laxative abuse.

Even if weight remains normal, excessive vomiting and laxative abuse can lead to severe dehydration and electrolyte disturbances, the most prevalent being hypokalemia.[7] Bulimics have died from cardiac arrest induced by severe depletion of potassium. Potassium depletion affects the neuromuscular system and can result in severe muscle weakness or near paralysis. Tendon reflexes are often decreased or absent. Abnormalities in the electrocardiogram (ECG) may be seen with flattening and inversion of the T wave, increased prominence of U waves, and sagging of the ST segment. Hypokalemia may impair kidney function with resultant edema affecting the entire body, making the patient appear fatter than she imagined herself before the onset of bulimia.[8]

Differential diagnosis

In the differential diagnosis of bulimia (*Tables 2 and 3*), one should first consider anorexia nervosa. The severe weight loss in anorexia nervosa may lead to life-threatening malnutrition; the weight in bulimia fluctuates but never to the point of emaciation seen in anorexia. However, anorexic patients after months or years of fasting may turn to vomiting to lower their weight. Caster et al[9] estimated that about 47% of their anorexic patients resorted to bulimia and Garfinkel,[10] 50%. About half of the anorexic patients of other investigators, such as Hsu et al,[11,12] had symptoms of bulimia.

Bulimia should be differentiated from schizophrenic delusions involving overeating. For instance, the schizophrenic might believe that her food is poisoned or that she must vomit to expel a strange creature from her stomach. A condition that may mimic bulimia is caused by a brain tumor in the hypothalamic area and can destroy or stimulate the hunger or satiety centers. Epileptic seizures might also stimulate the hunger center causing a bulimia-like syndrome. Although functional psychogenic vomiting may resemble bulimia, it usually occurs in the morning, and is seen more often in younger children or adolescents, especially if there are school avoidance or separation problems. There is no fear of gaining weight and no binging. Voracious appetite with excessive vomiting might be seen in the early stages of pregnancy, but there is no self-induced vomiting or fear of weight gain.

Another differential diagnosis is Kleine-Levin syndrome,[13] a rare disorder of males 10–25 years of age, in which episodes of ravenous appetite are followed by long periods of sleep. These episodes, however, occur only three or four times a year and binges are not followed by induced vomiting.

A condition in which binges occur mainly at night is called the night eating syndrome[14,15] but does not include purging.

Medical evaluation

It is important to study the patient thoroughly to rule out any organic reason for the behavior (*Table 4*). Physical examination and hematologic studies, especially liver function tests, should be done. Blood

Table 3. Differential diagnosis of bulimia

Illness	Differential symptoms
Anorexia nervosa	Only if weight loss is more than 25% of original body weight
Schizophrenia	Delusions associated with food
Brain tumor (hypothalamic area)	Destruction or overstimulation of the hunger and satiety centers
Epileptic seizures	Affecting the stomach or stimulate vomiting
Severe migraines	Associated with vomiting but not self-induced
Psychogenic vomiting	Not related to binges or fear of weight gain
Early pregnancy	Voracious appetite with usually early morning nausea, vomiting not self-induced
Kleine-Levin syndrome	Ravenous appetite in young males followed by sleep, 3–4 times per year; no vomiting
Night eating syndrome	Binging episodes mainly in late evening or at night with or without vomiting

Table 4. Ancillary tests for the evaluation of bulimia

Test	Rule
Blood glucose	Hypoglycemia
Urea nitrogen	Dehydration
Electrolyte	Hypokalemia and electrolyte imbalance
Radiographic series of upper gastrointestinal tract	Hiatal hernia and gastric or duodenal ulcer
Radiographic series of lower gastrointestinal tract	Crohn's disease, colitis
Xylose test and fat absorption	Malabsorption syndrome
Electroencephalogram	Epilepsy or brain tumor
CT scan of brain	Brain tumor
Electrocardiogram	Cardiac arrhythmias or hypokalemia

should be taken before breakfast in order to rule out hypoglycemia. Upper gastrointestinal radiographic series should be done to differentiate hiatal hernia or gastric outlet obstruction from a peptic ulcer that could cause repeated vomiting episodes. In cases of associated diarrhea, malabsorption syndrome should be considered. It is advisable to include electroencephalography and cranial computed tomography to rule out the possibility of a brain tumor or epileptogenic activity. Repeated blood tests for urea nitrogen and electrolyte levels, especially serum potassium, are important because of the danger of dehydration and hypokalemia. An occasional ECG can alert the physician to cardiac arrhythmias or hypokalemia.

Personality features and prognosis

As in anorexia nervosa, the younger the bulimic patient is, the better the prognosis, as the habits of binging and vomiting are not yet embedded in the personality. Clinical experience shows that symptoms grow worse with time. Severity and frequency of binging-purging episodes are correlated with the age of the patient. High school bulimic girls who have only experimented with "pigging out" for a short time are able by their own volition to abandon this habit and resort to eating less as a means of controlling their weight. However, bulimic patients of college age or older find it difficult to stop the gorging-purging cycles. College-age bulimics often become so preoccupied with food they find it impossible to study, and may drop out of school.

Chronicity confers a worse prognosis since pathological types of behavior often develop in connection with the illness. Since bulimic patients are primarily obese, they rarely reach such low levels of weight as anorexics. In contrast to anorexics, who are rigid and constricted in behavior to a degree of being obsessive-compulsive, bulimics seem to be more labile in mood and feel more out of control. Since they do not restrict the amount of food eaten, they tend to rely on laxatives, diuretics, and vomiting, which are external manifestations of their lack of control. They often show more impulsive behavior with manifestations at times of self-destructive tendencies, such as suicide attempts or self-mutilation. This uncontrolled behavior indicates a marked ego deficit and reduced ability to control their impulses. Bulimics often vent underlying conflicts by pathological habits such as kleptomania, alcoholism,[16,17] and drug addiction.

In summary, bulimics tend to have less control than anorexics, and a more severe and chronic course of illness. Consequently, bulimia is more difficult to treat and requires prolonged therapy due to its chronicity.

Medical treatment

Bulimia can induce a medical emergency (*Table 5*) in individuals with severe hypokalemia, which can cause sudden cardiac arrest. Moderate serum potassium depletion can result from inadequate intake of food alone. During vomiting, the body loses 5–10 mEq/L serum potassium in each liter lost from the stomach. Significant deficits of potassium may result from such direct losses in the vomitus. Since the gastric fluids also contain hydrochloric acid, severe vomiting could cause metabolic alkalosis, which leads to inappropriately high urinary potassium excretion, regardless of the degree of potassium lost in the vomitus.

It is important for the physician who treats the bulimic patient to recognize the clinical signs of severe hypokalemia so that potassium can be administered. Potassium chloride is the salt of choice, especially in patients with alkalosis. In patients with

Table 5. Treatment modalities for bulimia

Medical treatment
Correction of dehydration and electrolyte imbalance, especially hypokalemia
Psychotherapy
Individual insight orientation (psychoanalytic)
Individual support
Group therapy (general, including patients with other problems)
Group therapy for eating disorders
Assertiveness-training group
Family therapy
Biofeedback
Hypnosis
Psychopharmacotherapy (medication)
Creative or art therapy
Recreational therapy
Vocational rehabilitation (if necessary)
Behavior therapy

less severe alkalosis, organic salts such as gluconate or citrate might be adequate.

Potassium infusion is best monitored by frequent determinations of plasma potassium and examination for clinical symptoms such as muscular weakness or paralysis. Electrocardiographic monitoring may not accurately reflect total body potassium content. However, in cases of rapid intravenous administration of potassium, electrocardiographic monitoring is advisable.

Psychotherapy

No single therapeutic modality has been successful. Many clinicians feel that since underlying conflicts are involved, intensive analytic therapy is indicated, with the hope that once abreaction of traumatic events occurs, the symptoms will disappear; however, even prolonged psychoanalysis may not work. An attempt must be made to help the patient recognize that gorging and vomiting are substitutes for unacceptable feelings. Thwarted aggressive drives may be unconsciously converted into binges as a means of expression. Many bulimic patients are torn between aggressive tendencies and the submissive behavior expected of women, a conflict born of early parental demands and expectations. Many little girls figuratively and literally have to "swallow" whatever is demanded of them and cannot assert their own likes or dislikes, even when they reach college. The fear of saying "no" leads to symbolically spitting or vomiting, the only way these patients can assert themselves. Once the patient recognizes the connection between vomiting and anger, assertiveness training, either group or individual, can be beneficial.

Gorging and vomiting may also be a substitute for sexual satisfaction or may result from fear of sexual conflicts. This becomes obvious when the whole ritual leads the individual into a trancelike state of tranquility, a kind of semihigh. Some patients masturbate during attempts at vomiting to heighten the pleasure.

The role of the therapist is to provide a warm, nonjudgmental atmosphere in which the patient is encouraged to relate the entire story surrounding the bulimia. The resulting "free association" can reveal the source of the underlying conflicts via the symbolic meaning of the symptoms. It is especially helpful if the patient can divulge her sexual feelings, practices, and fears. The supportive attitude of the therapist can help the patient realize that the therapist accepts her the way she is, fat or not. Acceptance by the therapist can eventually lead to the acceptance of "me" by the patient.

Dietary instruction is important. Knowledge of proper diet can provide a sense of security and control.

Changing the environment may be necessary. Many patients stopped the binging-vomiting episodes for two to three months while in the hospital and continued this therapeutic gain after discharge; however, some relapsed into bulimic episodes when they went home. If the home environment is too stressful and family therapy is not agreed to, the patient should be advised to move. If already living alone, she can be advised to try to make new friends by becoming involved in other activities, such as music, sports, or hobbies that might enrich her life. Loneliness, boredom, and empty time are the enemies of the bulimic. Some patients who work realize this and are afraid to take vacations or to take time off. One of my patients asked her boss to overload her with work so that she would not have time to binge at the office.

In my experience, the most difficult bulimic to treat is one who is also an alcoholic. Both addictions essentially stem from the same underlying conflicts and should be treated concurrently. Unfortunately, these patients are often referred back and forth between alcoholism counselors and eating disorder experts, each insisting that the other disorder be treated first. Consequently, the patient receives no treatment and may despair of being helped. Since cross addiction is becoming more common, professionals in these fields should acquaint themselves with both syndromes.

A complete psychiatric evaluation should be undertaken to rule out other psychopathologies. Bulimia could be the presenting symptom for underlying depression or severe anxiety, conditions that must be addressed before alleviation of bulimic symptoms can be expected. In underlying endogenous depression, antidepressant medications might be indicated. Some success has been reported with tricyclic agents or monoamine oxidase inhibitors. Some clinicians found phenytoin (Dilantin) to be beneficial in reducing the frequency of the binges,[18] with some reporting incidence of return to normal eating as high as 90%.[19] However, there is a need for more evaluation of this drug in clinical practice. Although nonspecific abnormalities could be found in electroencephalographic (EEG) recordings in up to one third of the patients,[18] the reduction in bulimic episodes during treatment with phenytoin did not correlate with improvement indicated by EEG recordings.

Group therapy is important in providing mutual support and camaraderie, through which patients

are able to recognize themselves and their problems by identifying with others who have the same difficulties. The Society for Anorexia Nervosa and Eating Disorders is sponsoring groups throughout the United States patterned on the Twelve Steps of Alcoholics Anonymous (AA). The first step reads, "We came to believe that we were powerless over alcohol and that our lives had become unmanageable."[20] Taking this first step strikes at the heart of the problem. Unlike alcoholism, however, food addiction presents an extraordinary dilemma: the alcoholic can stop drinking but the food addict must continue to eat or die. Thus, the groundwork of recognizing what the binge represents is all-important to the bulimic.

Behavioral therapy is best accomplished within the structured environment of a hospital. It is more difficult to apply these methods to outpatients: although one can influence eating habits, these patients need a great deal of support to prevent frustration and depression. The outpatient, however, can be asked to start a detailed diary of what she eats, how much, how often, and the feelings involved during regular meals versus binging episodes. By studying the diary, the patient becomes aware of the relationship between the amount eaten and the level of her feelings at that time. Moreover, describing her feelings during a binge may provide some insight into what triggers these episodes in the first place. The diary also aids the therapist's understanding of the circumstances leading to these events, enabling him to use his knowledge and experience in helping the patient to prevent them.

The diary also serves as a barometer of the patient's level of motivation. Some patients, of course, have been pressured into coming to therapy by parents or spouses and are willing to come and "chat" with the doctor but have no intention of changing. Unwillingness to write the food diary is a serious sign of resistance. At times, the patient will say she is willing but somehow "forgets" to record, "forgets" to bring it to the session, or has "lost" it. Unconsciously, the patient is not ready to give up the symptoms. The therapist can help explore this unconscious resistance to change. It could be a fear of facing responsibilities, once cured, or of losing the secondary gain from the illness, i.e., the special attentions of parents or spouse. Whatever form resistance takes, it must be dealt with openly or it will undermine the therapy.

New techniques, such as biofeedback and hypnosis, are promising. They rely mainly on relaxation, enabling the individual to recognize the real needs of her body.[21] Once she can recognize these feelings and separate them from aggressive or sexual drives, the urge to binge is much reduced. With self-hypnosis, the patient can finally use willpower rather than vomiting to control weight.

Another important hypnotic technique is age regression, whereby the patient relives the previous traumas underlying present conflicts.[22] Working through these conflicts can help the patient rid herself of the presenting symptom of bulimia.

Hypnosis can also be integrated with behavior therapy in the form of desensitization to the phobic or stressful condition that triggered the bulimia. The exact nature of the fear is defined and then associated with something pleasurable. This technique, developed by Erickson,[22] is known as anchoring of phobias.

It must be emphasized that the rate of success is higher in centers in which bulimia is addressed as part of an overall program of eating disorders. In this setting, the treatment program is tailored to the specific needs of each individual.

The main thrust of psychotherapy should be to change the values and priorities in the patient's life. Narcissistic preoccupation[23] must give way to more mature concerns with content and value, and the patient must come to realize that the development of acceptable values rather than appearance is more fulfilling.

In summary, cessation of bulimia itself is not to be construed as cure: the patient must also learn to accept herself and her appearance. Beauty *is* in the eye of the beholder, especially when the beholder is oneself. Unfortunately, patients who succeed in staying slim by any or all means might remain preoccupied with food and weight, and might continue to have unresolved emotional conflicts. Bruch[24] called them "thin fat people." Their persistent or exacerbated conflicts resulting from controlling their weight are often worse than the "happiness" of being slender. Overeating may be a defense that helps an obese person maintain an emotional balance, and when this defense is given up, that balance may be lost.

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