

## **ANOREXIA NERVOSA**

Nancy J.V. Bohannon, M.D.

The earliest clinical account of anorexia nervosa dates from 1689 in Richard Morton's *Treates of Consumptions*, which includes a description of a girl who was "like a skeleton clad only with skin." The condition has existed over the centuries, having been epidemic among the followers of St. Jerome in the seventh century, while during the Industrial Revolution it was known as chlorosis.

In 1868, Sir William Gull coined the term anorexia nervosa, taking anorexia from the Greek word for "without a longing to eat" and adding "nervosa" to imply a nervous or psychiatric disorder; Gull's definition was of a girl between the ages of 16 and 25 with weight loss, amenorrhea, slow pulse, irritability, and excessive energy. He ascribed the disease to a "perversion of the ego" and a "morbid mental state," thus making the association between mind and body in the syndrome for the first time.

Anorexia nervosa is a psychophysiologic eating disorder that occurs mainly in young, previously healthy women who develop a paralyzing fear of becoming fat. The syndrome is primarily manifested by an extreme aversion to food and a distorted perception of the body leading to self-starvation. Amenorrhea and other metabolic changes occur with the profound emaciation. The disorder is life-threatening, with a fatality rate (excluding suicide) as high as 9%, usually due to complications of starvation. Among patients who have had anorexia nervosa for years, suicide accounts for another 2% to 5% of deaths. The overall morbidity rate ranges between 34% and 65%.<sup>(1)</sup>

Ninety to ninety-five percent of all anorectics are adolescent girls or young women; most are white and from middle- or upper-middle-class families. The syndrome usually starts between the ages of 12 and 25, with onset most common between the ages of 13 and 14 and 17 and 18. It may begin suddenly or insidiously and can occur as either a single episode or last for months or years.

The incidence of anorexia nervosa seems to be increasing. In southern California, it has been estimated that one in 100 girls between the ages of 16 and 18 may be anorectic, while studies in New

York indicate the incidence has doubled over the last 20 years.<sup>(2)</sup> A prevalence study conducted in England reports that one in 200 girls between the ages of 12 and 18 is anorectic, while among 16- to 18-year-old girls in that country, the rate may be as high as one in 90.<sup>(3)</sup> The syndrome also appears to be occurring with increasing frequency in Japan.

### **Diagnosis**

The diagnosis of anorexia nervosa must exclude any possible organic causes for loss of appetite, such as endocrine disorders (e.g., an underactive pituitary gland), metabolic disorders (e.g., severe kidney or liver failure), many cancers, tuberculosis, certain side effects of drug use, some nutritional deficiencies (e.g., vitamin B12 deficiency), and psychological disturbances not related to the syndrome (e.g., hysteria, anxiety, depression). Anorexia nervosa should also be differentiated from satiety, sitophobia (fear of eating because of pain caused by ingestion of food due to some physical reason), and food intolerance due to allergies.

In general, the diagnosis of anorexia nervosa can be made if the following signs and symptoms are present: 1) onset before age 25; 2) anorexia with weight loss of at least 25%; 3) a distorted attitude toward eating, food, or weight; 4) absence of a medical illness that could account for the weight loss; 5) no other psychiatric disorders; 6) ritualized exercise; and 7) the presence of one or more of the following—amenorrhea, lanugo hair, bradycardia, periods of overactivity, episodes of bulimia, and vomiting.<sup>(4)</sup>

### **Etiology**

The exact cause of anorexia nervosa is unknown, although most investigators believe that complex psychological factors are involved. Those affected by this disorder are frequently over-achievers who nevertheless suffer from poor self-esteem and who do not feel in control of their lives. They are often the "perfect" children of unusually industrious, conscientious, ambitious parents. These parents tend to have a strong sense of decorum and high standards of accomplishment.<sup>(5)</sup>

Although these families may appear normal to outsiders, they place great emphasis on outward appearances and visible evidence of achievement,

while the quality of interpersonal communication among family members tends to be inadequate. The parents of these patients are often older than normal, and the father is frequently an over-demanding, self-made man, while the mother is overprotective, overdirective, and preoccupied with appearances. Both parents often put a great deal of pressure on the child to succeed in school and are likely to have high expectations for her.(6-11)

Considered model children, these girls are obedient, helpful, eager to please, dependable, and neat, although they have poor relations with their peers and can be manipulative. Frequently, these adolescents have never rebelled in any normal way and asserted their independence from their parents, possibly because of fear of punishment. It has been suggested that this fear of punishment combined with fear of being unable to live up to their own expectations of perfection may be the reason they strive so vigorously to succeed and please their parents.(6-11)

Many investigators believe these girls have a fear of adult human sexuality. By becoming anorectic and losing or never developing feminine curves and normal menstrual function, they avoid having to deal with this unknown and frightening occurrence. Some psychotherapists feel that sexual impulses and fear of pregnancy accompanied by fantasies of oral impregnation may underlie the development of this disease in some anorectic's. In this interpretation, the patient equates fatness with oral impregnation, which also explains the anorectic's preoccupation with her abdomen.

Other authors believe that the roots of anorexia nervosa can be traced to the child's inability to distinguish normal hunger sensations because of inappropriate feeding patterns in infancy. It is postulated that the mothers of these girls may have reacted to crying due to stress or pain during infancy by offering food, so that the baby learned to eat in response to improper environmental signals. Thus, the anorectic may not recognize or trust her own legitimate body signals of hunger and question the legitimacy of other natural physical feelings as well.(12)

These feelings of uncertainty about bodily sensations may lead to a fear of not being able to control these functions. The girl may consider eating, as well as other physically enjoyable

functions, to be evidence of personal weakness. In many anorectics, these misconceptions are compounded by feelings of unworthiness, helplessness, and a tremendous sense of guilt for some unidentifiable wrong-doing. Their anorexia may have a strong self-destructive component.

Although the psychological basis of anorexia nervosa is widely accepted, possible genetic factors are currently being studied. So far, however, the information is not sufficient to establish a relationship between anorexia and mood disorders or other genetic factors.

---

**TABLE. Clinical Features of Anorexia Nervosa.**

---

**Demographic and historical features:**

Predominance of women  
Onset between the ages of 12 and 25  
Predominantly white Middle- to upper-middle-class families  
History of overweight period  
Preoccupation with food, nutrition  
Preoccupation with physical exercise

**Symptoms:**

Amenorrhea Constipation, often with complaints of abdominal pain  
Cold intolerance  
Agitation or lethargy  
Emesis

**Physical findings:**

Cachexia  
Increased lanugo-like body hair  
Bradycardia  
Hypotension  
Impaired renal function  
Hypercarotenemic skin  
Peripheral edema  
Hypothermia  
Anemia

**Laboratory findings:**

Decreased thyroid function test values  
Abnormalities in cortisol and growth hormone secretion  
Decreased gonadotropins  
Decreased estrogen production  
Hypercarotenemia  
Other evidence of hypothalamic dysfunction  
Elevation of blood urea nitrogen  
Decreased WBC and platelet counts

---

**Behavioral Characteristics**

Anorexia nervosa often starts when a chubby teenager who is oversensitive about being plump begins a weight loss diet that soon escalates into an uncontrollable preoccupation with food and the pursuit of thinness. In these patients, the act of eating causes extreme anxiety amounting to a phobic disorder. The weight loss is achieved by

severe restriction of caloric intake and, in some patients, by alternating restriction of food intake with episodes of binge eating (bulimia) followed by self-induced vomiting or the abuse of laxatives. Both of these forms of weight control are often accompanied by frenzied exercise programs.

Anorectics drastically reduce their overall caloric intake, but more specifically, they disproportionately decrease the carbohydrates and fat in their diet. Their compulsive and bizarre eating habits include a detailed knowledge of the caloric value and composition of food that enables them to deliberately choose a diet that is low in calories but high in bulk.

As a general rule, the anorectic patient steadfastly denies hunger, although her obsession with the preparation and handling of foods belies this. Her preoccupation extends to the elaborate planning and preparation of meals for family and friends, although she will not partake in these meals herself. These patients will practice deceit, often concealing uneaten food or lying about food intake. They typically refuse to eat in public, but will frequently hoard carbohydrate-rich foods such as cookies and candy in their rooms or in their pockets or purses. If they are forced to eat in public, they will either dispose of the food surreptitiously or will make a great fuss over the food, often cutting it into very small pieces and demonstrating an almost ritual-like behavior in separating the elements of the food, such as removing the skin from beans or the raisins from bran flakes.

It has been suggested that far from not being hungry, these patients have learned to enjoy hunger pangs because of the sense of self-control it gives them, compensating for the lack of control they feel in other areas of their lives. Their absolute control over their appetites makes them feel morally pure and superior. These patients often espouse esthetism and look down on the pleasures of the flesh.

**Bulimia.** Between 13% and 50% of anorexia nervosa patients will alternate self-starvation with periodic episodes of uncontrollable eating binges (bulimia) which are regularly followed by self-induced vomiting or laxative abuse. Care must be taken to distinguish the bulimic anorectic from restrictive anorectics (pure self-starvers).

Those who binge and vomit usually have been sexually active prior to the development of

anorexia and tend to have more trouble with drug and alcohol abuse and to be more depressed than those who simply starve themselves. They are also more likely to attempt suicide, suffer from other compulsions, such as stealing, and have related physical complaints, such as chronic sore throat and erosion of dental enamel. The misuse of laxatives and diuretics characteristic of bulimia is also more likely to lead to complications due to body chemistry imbalances. Anorectics with an overlapping bulimic syndrome tend to have a more difficult and longer course of illness.

**Exercise.** Excessive physical activity can be the first indication of developing anorexia nervosa, at times even predating weight loss. These girls may become "aerobic junkies," taking many hours of aerobic, gymnastic, and tennis classes, to the exclusion of all other interests in their lives. The compulsion to exercise also leads them to avoid mechanical means of transportation, such as automobiles, elevators, and escalators. This frenzied pursuit of exercise can be especially dangerous for anorexia patients because the physical exertion can lead to further depletion of their body's potassium supply, which may already have been depleted by vomiting or laxative abuse.

Anorectics have an extremely disturbed perception of their own body and do not recognize their degree of emaciation. This distorted body image, which is not based on reason and cannot be swayed by rational argument, usually affects only their perception of their own body and does not extend to others. Commonly, a patient who is 5 feet 6 inches tall and weighs 90 pounds will consider herself "much too fat" but will view another woman who is the same height but weighs 120 pounds as "just right."

**Anorexia in Men.** Anorexia nervosa is rarely seen in men, but when it does occur, the clinical picture is somewhat different from that found in women. In men, the disorder may be related to gender identity problems or prior obesity, and since our society places great emphasis on slimness in women but on muscular development in men, anorectic boys are more likely to pursue athletics or muscle-building endeavors than to strive for extreme thinness.

The psychological problems of postadolescent-onset male anorectics are also

different from those seen in both classic female and adolescent-onset male anorexia nervosa. The postadolescent male presenting with anorexia nervosa is more likely to be depressed and to suffer from feelings of helplessness and despair. Although there is no evidence of psychosis, the majority of these men are not independent and are not sexually active. In contrast to the scholastically overachieving female anorectics, there is a lack of educational achievement among these older male anorectics. They tend to avoid competition to the extent of seeming to withdraw from even the routine challenges of everyday life.

### **Physical Findings**

Physical manifestations of anorexia nervosa include amenorrhea, dehydration, decreased body temperature, hypotension, and bradycardia. Emaciation and loss of subcutaneous fat and normal body contours also occur. The abdomen is markedly scaphoid, and the skin is dry and scaly, often with a yellowish tint caused by hypercarotenemia secondary to metabolic changes. Increased body hair of the lanugo type frequently appears. Despite the dramatic weight loss, the degree of emaciation may not be apparent when the patient is fully dressed because of edema in the legs and parotid enlargement, which gives fullness to the face.

Cessation of ovulatory menses may predate weight loss in up to 25% of patients. For this reason, some endocrinologists suspect a neuroendocrine malfunction that could also be the source of the disturbances in blood pressure and temperature regulation, abnormal eating behavior, sexual disinterest, and hormonal changes. Other evidence, however, indicates these neuroendocrine abnormalities are secondary to malnutrition.

Decreased estrogen production may lead to the development of osteoporosis, and clinical and laboratory studies may show nutritional anemia, decreased white blood cell and platelet counts, vitamin and mineral deficiencies, impaired renal function, electrolyte imbalances, decreased gonadal function, and hypothyroidism. Subsequently, these patients often lose the ability to maintain normal body temperature in the presence of heat or cold. The impaired renal function brought about by chronic starvation, self-induced vomiting, and abuse

of diuretics and laxatives may cause death in some patients due to abnormal blood chemistry levels.

When these patients do eat, they will often gain weight rapidly due to fluid retention in the tissues which causes swelling of the ankles, legs, face, and hands. This can cause panic in patients who are not adequately prepared; however, when appropriately managed, the edema is not permanent. The digestive system is also slowed in anorexia nervosa patients, leading to postprandial bloating, sensations of fullness, abdominal pain, and constipation due to slowed intestinal action. Their inability to tolerate food because of these symptoms will further compel these patients to avoid food.

### **Treatment**

Given the intense perceptual disturbances and obsessive behavior patterns characteristic of this disorder, a powerful resistance to therapy exists in these patients. The primary goal is to restore weight and make the patient as medically well as possible as soon as possible, since starvation itself is known to have profound effects on behavior, and psychotherapy is of little benefit until nutritional status has improved. Once this is accomplished, another important goal is to help the patient develop a sense of autonomy so that she feels in charge of her life and able to gain control of unhealthy eating behaviors and make rational decisions regarding current and future situations. This combined medical and psychiatric approach has significantly reduced the mortality of this disorder.

Hospitalization may be necessary if weight loss exceeds 30% of ideal body weight over three months, since sudden death is possible at these low weight levels. Recent studies on the cause of death in patients with anorexia nervosa indicate that sudden death is probably due to ventricular arrhythmias similar to the cause of sudden death that has been known to occur due to liquid protein diets.<sup>(13)</sup> Evidence of fluid and electrolyte abnormalities, intercurrent infection, and prerenal azotemia due to volume depletion are also indications for hospitalization. Current therapy includes behavioral modification and family counseling. Some therapists believe psychotherapy is helpful; however, these patients are skilled at manipulation and distortion which may frustrate therapy. Supportive care by an understanding

physician may accomplish as much as formal psychotherapy. Constant reassurance by the physician that the patient will not be allowed to get fat is necessary, as well as regular office visits to review diet, weight status, and exercise patterns. Sometimes a mutually agreeable, specific contract can be useful. This contract should be based on short-term realistic goals for weight gain and exercise in order to avoid depressing the patient further if success is not immediately achieved.

During the weight-gain period, patients should be monitored carefully. Meals must be supervised, preferably by the same person each meal time, in order to make sure they are eaten. Friendly persuasion is more effective than punitive measures, since it allows the patient to make autonomous decisions rather than encouraging rebellion. Past therapies that have not proved effective include hypnosis, electroshock therapy, and prefrontal lobotomy. Total parenteral nutrition is indicated only as a life-saving measure.

**Pharmacologic Intervention.** At this time, there is no established pharmacotherapy for the treatment of anorexia nervosa. However, antidepressants such as amitriptyline, trazodone (Desyrel), imipramine, and phenelzine are now used in treating this eating disorder. Other possible drug interventions include medications to stimulate the appetite (such as cyproheptadine), levodopa, and phenytoin (Dilantin).<sup>(14)</sup> Medications that stimulate motility of the upper gastrointestinal tract [such as metoclopramide (Reglan)] may be given to aid the reestablishment of a normal digestive and evacuation cycle. Laxatives, of course, are contraindicated in these patients. In those patients who also vomit, potassium supplementation maybe necessary.

### Prognosis

Psychological abnormalities persist in one third to one half of anorexia nervosa patients after two years of follow-up. During this time, relapses and remissions are common. Follow-up studies indicate that 60% of patients will continue to have behavioral eating problems after treatment ceases. Since social maladjustment and impaired family relations persist in as many as 50% of these patients, long-term psychotherapy and/or medical supervision may be necessary to control diet and

weight loss. Often these women may seem to have recovered and may function well at work but will remain socially maladapted, placing them at risk for relapse.

The prognosis is best when associated with early age of onset, sudden onset, short duration of illness, weight loss of less than 30%, no use of laxatives or vomiting, admittance of hunger and appetite, little sleep disturbance, and minimal denial of illness. Indicators of a poor prognosis include long duration of illness or amenorrhea, older age at onset, very low weight during illness or at diagnosis, previous psychiatric treatment, lower socioeconomic family status, married status, presence of bulimia, disturbed relationship with parents, and poor outcome after one year.<sup>(14)</sup> Treatment of patients with anorexia nervosa is a long-term, frustrating process. Relapses and failure are common and require perseverance on the part of the patient, the family, and the physician. However, with recent therapeutic methods, the mortality rate from this disease has decreased from between 10% and 30% to between 3% and 5%,<sup>(15)</sup> although some patients still die of starvation, suicide, and medical complications such as sudden death and stomach rupture.

\*\*\*\*\*

1. Schwartz DM, Thompson MG: Do anorectics get well- Current research and future needs. *Am J Psychiatr* 1981;138:319-323.
2. Herzog DB, Copeland PM: Eating Disorder. *N Engl J Med* 1985;313:295-303.
3. Crisp AH, Palmer RL, Kalucy RS: How common is anorexia nervosa: A prevalence study. *Br J Psychiatr* 1976;128:549-554.
4. Borson S, Katon W: Chronic anorexia nervosa: Medical mimic. *West J Med* 1981;135:257-265.
5. Drossman DA, Ontjies DA, Heizer WD: Anorexia nervosa. *Gastroenterology* 1979;77:1115-1131.

6. Halmi KA; Anorexia nervosa: Demographic and clinical features in 94 cases. *Psychosom Med* 1974;36:18.
7. Kay DWK, Schapira K, Brandon S: Early factors in anorexia nervosa compared with non-anorexic groups: A preliminary report with a discussion of methodology. *J Psychosom Res* 1967;11:133.
8. Bruch H: Anorexia nervosa, in: *American Handbook of Psychiatry*, cd 2. New York, Basic Books, 1975, chap 32.
9. Minuchin S, Rosman BL, Gailer L: In: *Psychosomatic Families: Anorexia Nervosa in Contest*. Cambridge, Mass., Harvard University Press, 1978.
10. Crisp AH: Clinical and therapeutic aspects of anorexia nervosa: A study of 30 cases. *J Psychosom Res* 1965;9:67.
11. Crisp AH: Primary anorexia nervosa or adolescent weight phobia. *Practitioner* 1974;212:525.
12. Bruch H. *Eating Disorders: Obesity, Anorexia Nervosa and the Person Within*. New York, Basic Books, 1973.
13. Isner JM, Roberts WC, Heymsfield SB, et al: Anorexia nervosa and sudden death. *Ann Intern Med* 1985; 102:49-52.
14. Goldberg SC, Halmi KA, Eckert ED: Cyproheptidine in anorexia nervosa. *Br J Psychiatr* 1979; 134:67-70.
15. The misnamed disorder: Anorexia nervosa. *Therapaeia* 1982, pp 6-18.