

Anorexia Nervosa in a 14-Year-Old Second-Generation Hispanic Adolescent Boy

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Chief Complaint and Presenting Problem

P IS A 14-YEAR-OLD, second-generation, Hispanic adolescent boy who was referred to the emergency department by his pediatrician for bradycardia (heart rate 41), refusal to eat, and weight loss (19 kg/42 pounds in 5 months). (See Tables 1–3.)

History of Present Illness

History was obtained from P.'s parents with the help of Spanish-speaking interpreters, as P.'s father spoke limited English, and his mother spoke no English. P. was reportedly doing well until five months prior to referral when he started exercising excessively and severely restricting his diet. P. reported that his family ate a great deal of junk food and fried foods. He maintained that these foods gave him a stomachache. According to P., he used to play video games and had long felt that this combination of sedentary behavior and eating fatty foods was unhealthy. When he entered high school, P. did not like the way his clothes fit and disliked being the slowest student in the gym class. P. reported that he decided to finally “get a grip” on his weight. He quit eating junk food altogether, restricting his diet to salads, green vegetables, and fruit. He lost approximately 19 kg in the five months prior to admission.

P.'s parents corroborated this history. Father reported that P. was very obsessive and compulsive about food. P. checked the refrigerator multiple times during the day to see what food was inside and what ingredients his mother would be using in her cooking. P.'s father loved cooking and cooked meals for the family on weekends. P. regularly snuck in the kitchen and objected to the use of oil and fat. P.'s father had to remove P. from the kitchen against his will many times, and later P. would refuse to eat. P. often read about calories and food, and he refused to drink juice or milk. There was no history of hiding food, vomiting, or using laxatives, which was confirmed by P.'s parents. P.'s father presented a picture of P. that was taken seven months prior to the current admission in which P. appeared thin even before he started his severe dieting.

P.'s mother reported that historically she had not worried about his behavior; however, in the previous three months she had noticed that he had become emaciated. Although P. was followed closely by his pediatrician during the month prior to admission and had been eating more, he failed to gain any weight. P. had increased his consumption of fruits and vegetables but would not eat oily or any

fatty substances, and whenever his parents persisted he started crying and would not eat any food at all. P. was also referred to an endocrinologist to rule out other medical causes of the weight loss. In the last visit to his pediatrician, the day before admission, P. was found to have a heart rate of 41. He was referred to the emergency department, where he was found to be consistently bradycardic and emaciated and was admitted.

P. and his parents denied symptoms of depression, loss of interest, or irritability. P. said he sometimes felt sad and disinterested, but he denied any lack of motivation. P. did report that he cries when he gets into trouble and when his parents force him to eat more. He denied any self-mutilating or self-harm behavior such as cutting, picking, or burning. He denied panic attacks, obsessive compulsive disorder (OCD), or posttraumatic stress disorder (PTSD) symptoms, but did acknowledge anxiety about his diet and gaining weight. He denied any manic or psychotic symptoms in the past. He also denied any movement problems or tics, stealing behavior, or symptoms of hyperactivity or inattentiveness. He denied fear of having a severe disease other than being afraid of gaining weight.

Past Psychiatric History

P. had not had any history of psychiatric evaluation or treatment until the six months prior to the current admission. When he started losing weight, his pediatrician referred him for psychiatric evaluation. P. was twice seen by a mental health professional and received individual psychotherapy. No medication was started. The parents were advised not to force him to eat too much.

Developmental History

P. was born by normal vaginal delivery at term. There were no complications for P. or his mother. P. started walking at one year and achieved other milestones at appropriate ages.

Educational History

P. is in the ninth grade and receives grades of As and Bs. His mother reported that three years earlier, P. got into an argument with another student, and his parents were called to take him home from school. P. had reportedly been bullied. There was no history of truancy or school suspension.

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Social History

P. lives with his mother, father, and two sisters (13 and 12 years old). P.'s parents are first-generation Americans who moved to the United States from Mexico before P. was born. P.'s father works in "air conditioning," and P.'s mother is a homemaker. P. and his family belong to the Catholic faith. P. got along well with his mother and sisters; however, he was reported to sometimes get into arguments with his father over food. P. expressed concerns that, as the eldest among the siblings, he was under a great deal of pressure. He felt he had to be a role model for his younger sisters, who looked up to him.

P. denied a history of physical, mental or sexual abuse. P. reported that he had no friends. He denied ever being sexually active. P. said that he was bored in his new residence to which his family had moved a few months earlier. He reportedly also had few friends in his previous neighborhood. He said he was stuck in the house watching TV and playing video games by himself when he would rather be active. P. dreamed of becoming a soccer player.

P. denied any history of alcohol or illicit drug use. No legal problems were reported.

Family History

There is no family history of psychiatric problems. Father has high cholesterol, and mother has high blood pressure. P.'s mother and sister appeared overweight.

Medical History

P. had no known drug allergies and no known medical problems other than the current weight loss and bradycardia. His prior nutritional status and growth had been within normal limits for age.

Medication History

There was no previous history of medication treatment.

Mental Status Exam

Upon examination, P. appeared well dressed and well groomed. He was emaciated and stunted. Muscle tone and strength were within normal limits, and no abnormal movements were observed. Gait was normal, and no psychomotor agitation or retardation was noted. P. initially appeared calm and cooperative, but as the interview progressed, he became more guarded and suspicious. He became minimally verbal, giving yes and no answers. He reported a stable mood, but looked dysphoric with restricted affect. His speech was monotonous, with a low pitch and low rate, tone, and volume. His thought process was logical and goal directed with tight associations. There was no indication of suicidal thoughts, homicidal ideation, or perceptual disturbances. He was alert and oriented to time, place, and person. P.'s recent and remote memories were intact. He could do serial sevens accurately. His intelligence appeared average, and he demonstrated an age-appropriate fund of knowledge. However, he showed no insight into his condition and continued to exhibit poor judgment in his food choices.

Hospital Course

Following admission, P. continued to have bradycardia and low blood pressure, which were stable. (See Table 4.) He was kept on

TABLE 1. GROWTH HISTORY AND NUTRITIONAL REQUIREMENTS

Growth History:

Weight: Weight (Actual): 36.5 kg 0.65%ile based on CDC 2-20 Years weight-for-age data.
 Previous weights: (6 months ago): 55 kg; (5 months ago): 55.5 kg
 Height: Height (Actual) cm: 160 cm 15.98%ile based on CDC 2-20 Years stature-for-age data.
 BMI: Body mass index is 14.22 kg/ (m²). 0.04%ile based on CDC 2-20 Years BMI-for-age data.
 IBW: 50.2; %IBW: 73

Estimated energy requirement for catch-up, weight gain:
 2350 kcal/day (64 kcal/kg)
 Estimated protein requirement: 1.5 gm/kg/day
 Estimated fluid requirement: 50cc/kg/day
 Goal: Weight gain of 2 lb weekly

CVR (cerebrovascular reactivity) monitor with continuous pulse-oximetry, which remained stable at 100% throughout his stay. P.'s height for age was acceptable; however, his body mass index (BMI) for age (73% std) was consistent with moderate acute malnutrition. Indeed, P. had lost 19 kg (34% of his body weight) in 4.75 months, consistent with severe weight loss (Tables 1-4).

P. was started on a regular diet, with anorexia protocols, calorie counts, and strict intake and output monitoring. Consultation was requested from a nutritionist, and a calorie goal of 2350 kcal/day was recommended. Limits were set such that two-thirds of this goal had to be consumed or nasogastric feeds would be instituted. P. was

TABLE 2. ADMISSION LABORATORY VALUES

| Labs on admission | | |
|-----------------------------|----------|---------------------|
| Component | Value | Range |
| PHOSPHOROUS | | |
| PHOSPHOROUS | 4.0 | 2.5 – 5.0 mg/dL |
| CBC-DIFF | | |
| WBC | 5.11 | 4.5 – 13.5 THOU/uL |
| RBCS | 4.90 | 4.10 – 5.20 MIL/UL |
| HGB | 14.7 | 13.0 – 16.0 g/dL |
| HCT | 42.8 | 36.0 – 50.0 % |
| MCV | 87.3 | 78.0 – 98.0 FL |
| MCH | 30.1 | 26.0 – 32.0 PG |
| MCHC | 34.4 | 31.0 – 37.0 % |
| RDW | 14.2 | 11.5 – 14.5 % |
| PLATELET COUNT | 226 | 150 – 450 THOU/uL |
| MEAN PLT VOLUME | 10.0 (*) | 7.3 – 9.7 FL |
| AUTOMATED | 2.18 | 1.80 – 7.97 THOU/uL |
| ABS NEUT | | |
| RBC MORPHOLOGY | NORMAL | |
| SEG | 42.8 | 40.0 – 59.0 % |
| LYMPHOCYTE | 49.6 (*) | 33.0 – 48.0 % |
| MONOCYTE | 6.1 (*) | 0.0 – 6.0 % |
| EOSINOPHILS | 0.7 | 0.0 – 5.0 % |
| BASOPHIL | 0.8 | 0.0 – 2.0 % |
| T4 FREE | | |
| T4 FREE | 0.68 (*) | 0.78 – 2.2 ng/dL |
| THYROID STIM HORMONE | | |
| THYROID STIM HORMONE | 3.49 | 0.46 – 5.0 mIU/L |

TABLE 3. ADMISSION ELECTROCARDIOGRAM (ECG)

| | |
|---|------|
| Imaging: ECG on day 1 | |
| Heart Rate | 46 |
| RR | 1304 |
| P-R Interval | 136 |
| QRS Duration | 92 |
| QT Interval | 450 |
| P. Axis | 37 |
| QRS Axis | 48 |
| T Wave Axis | 39 |
| QTc | 394 |
| Result: Impression: OTHERWISE NORMAL ECG | |
| PEDIATRIC ECG | |
| INTERPRETATION ————— SINUS BRADYCARDIA | |

also given Boost three times a day (TID), a nutritional supplement containing 190 calories, 7 grams of fat, and 16 grams of protein, which he took well. P. was encouraged to drink fruit juice instead of plain water, which he obliged with reluctance. He was started on a daily multivitamin and zinc supplement. P. continued to restrict certain foods (e.g., mayonnaise, butter), but he was otherwise cooperative with his diet.

P. was started on fluoxetine 10 mg orally (PO) each morning, which he tolerated well. Olanzapine was also considered, as it has been associated with weight gain and could have targeted P.'s weight-oriented obsessive-compulsive thinking and cognitive distortions. However, P.'s cognitive distortions were addressed in psychotherapy using cognitive behavior therapy (CBT). Nevertheless, P. continued to feel that he was fat and needed to lose weight. During interviews, P. continued to display rigid thoughts about his eating. Attempts to provide psychoeducation were not successful, as P. failed to show insight into his condition. Both

parents participated in family therapy sessions, but P. was unhappy with this approach.

P.'s parents reported that P. was angry with them, blaming them for his admission. They had noticed no change in his attitude toward food since hospitalization, and they felt that he was eating because he was being monitored and feared the feeding tube. They worried that he would continue to severely restrict his diet after discharge.

P. stayed in the hospital for 6 days and gained 1.1 kg (see Table 5). After discussion with P.'s parents and the primary team, it was decided that P. would need continuing psychiatric care for his eating disorder in the form of acute inpatient treatment or intensive outpatient treatment. However, an appropriate program for boys could not be identified. As a result, P. was discharged on fluoxetine 10 g and a multivitamin supplement and transferred to a crisis stabilization center for further management.

Brief Formulation

In summary, P. is a 14-year-old Hispanic boy with no past medical or psychiatric history referred for evaluation of restricted eating, loss of a third of his body weight, and bradycardia. P. met diagnostic criteria for anorexia nervosa (AN) and was admitted for medical stabilization and refeeding (Table 6). From a biopsychosocial perspective, several factors could be contributing to his clinical picture, including an overweight mother and sister from whom he was trying to establish a separate identity; P. was clearly distressed by the obesity in his family, and he worried about the health of his mother and sister.

In addition, at this developmental stage, social isolation, manifested by the experience of being bullied at school and peer pressure to be lean and thin, could have been a significant factor. Finally, cultural factors and the family relocation and loss of the previous community may have been significant issues that impacted the entire family.

TABLE 4. HOSPITAL COURSE: VITAL SIGNS

| Vitals | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 |
|----------------------|------------------------------|---------|---------|---------|---------|--------|
| Pulse | 48 | 59 | 64 | 47 | 88 | 72 |
| Blood Pressure | 101/67 | 79/53 | 80/53 | 88/44 | 87/55 | 81/51 |
| Temp. (oral) | 36.6 | 36.7 | 36.4 | 36.8 | 36.8 | 36.9 |
| Respiration | 14 | 16 | 16 | 20 | 16 | 16 |
| Chemistry-Blood | Ref. Range | Day 1 | Day 2 | Day 3 | Day 4 | Day 6 |
| Sodium | Latest Range: 136–145 mmol/L | 137 | 138 | 136 | 138 | 137 |
| Potassium | Latest Range: 3.5–5.6 mmol/L | 4.4 | 4.6 | 4.4 | 4.5 | 4.4 |
| Chloride | Latest Range: 95–105 mmol/L | 104 | 103 | 102 | 103 | 102 |
| CO ₂ | Latest Range: 20–28 mmol/L | 25 | 26 | 28 | 26 | 28 |
| Anion Gap | Latest Range: 5.0–18.0 | 12.4 | 13.6 | 10.4 | 13.5 | 11.4 |
| Glucose | Latest Range: 70–110 mg/dL | 81 | 73 | 82 | 81 | 76 |
| BUN | Latest Range: 5–25 mg/dL | 21 | 19 | 25 | 22 | 18 |
| Creatinine | Latest Range: 0.3–0.8 mg/dL | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 |
| Calcium | Latest Range: 8.8–10.7 mg/dL | 8.3 (L) | 9.2 | 8.9 | 9.2 | 8.9 |
| Phosphorous | Latest Range: 2.5–5.0 mg/dL | 4.0 | 4.4 | 5.1 (H) | 4.8 | 4.6 |
| Magnesium | Latest Range: 1.5–2.3 mg/dL | 2.3 | 2.5 (H) | 2.4 (H) | 2.3 | 2.4(H) |
| Total Protein | Latest Range: 6.0–8.0 g/dL | 6.8 | 6.4 | | | |
| Albumin | Latest Range: 3.7–5.5 g/dL | 4.0 | 3.9 | 3.7 | 3.6 (L) | 3.5(L) |
| Alkaline Phosphatase | Latest Range: 130–525 U/L | 96 (L) | 99 (L) | | | |
| AST (SGOT) | Latest Range: 15–40 U/L | 25 | 25 | | | |
| ALT (SGPT) | Latest Range: 10–50 U/L | 16 | 23 | | | |
| Bilirubin Total | Latest Range: 0.2–1.0 mg/dL | 0.9 | 0.5 | | | |
| Zinc | Latest Range: 60–120 ug/dL | | | | 59 (L) | |

TABLE 5. HOSPITAL COURSE: WEIGHTS

| | 6 months prior to admission | 5 months prior to admission | Admission date, day-1 | Discharge date, day-6 |
|--------------------------|-----------------------------|-----------------------------|-----------------------|-----------------------|
| Weight (Kg) | 55 | 55.5 | 36.5 | 37.6 |
| Height (cm) | Not available | Not available | 160 | 160 |
| BMI (kg/m ²) | Not available | Not available | 14.26 | 14.69 |

BMI, body mass index.

Multi-Axial Diagnoses

| | |
|-----------|---|
| Axis I: | Anorexia nervosa, restricting type Rule out anxiety disorder not otherwise specified |
| Axis II: | Deferred |
| Axis III: | Bradycardia Weight loss |
| Axis IV: | Moderate (family, friends, school) |
| Axis V: | Global Assessment of Functioning score: 40 |

Discussion

This case highlights the complexities and challenges of diagnosis and treatment of AN, particularly in males. AN is a disorder of unknown etiology characterized by restricted eating, emaciation, and distorted body image, as well as high rates of chronicity, morbidity, and mortality. The prevalence of AN among men is much lower than among women, with up to 9% of women vs. 0–3% of men (Treasure et al. 2010). Moreover, males are less likely to be diagnosed with an eating disorder even when they exhibit the same signs and symptoms as females (Anderson 1992). However, for reasons that are not yet clear, AN is increasing prevalence among all

age groups and cultures (Lucas et al. 1991; Hsu 1996). It has also been found that AN may occur more in populations where obesity is common (Lozano 2008). Notably, there has recently been an increase in the prevalence of eating disorders among males (AHRQ 2009) and minorities in America (Crago et al. 1996). It has been reported that eating disorders manifest similarly in both genders, with similar psychiatric comorbidity and psychosocial morbidity (Woodside et al. 2001).

The data on eating disorders in Hispanics is limited. One population-based survey found higher rates of dieting and using laxatives or diuretics among Hispanic females as compared to other groups (Neumark-Sztainer et al. 2002). It has also been found that Hispanic populations have a higher prevalence of binge eating disorders but a lower prevalence of AN and bulimia nervosa. Those born in the United States with lower educational levels are at higher risk for eating disorders than those with higher educational levels. Furthermore, this group is especially at risk because of lower utilization of healthcare resources and less access to treatment (Alegría et al. 2007).

The issues surrounding AN may be further complicated as childhood obesity becomes an increasingly urgent public health problem in the United States. The media abounds with messages promoting healthy food and low calorie alternatives. Although such messages can promote public health, they can also be misunderstood. This may have been the case with P., who reportedly started dieting and exercising in order to be healthy.

Treatment of AN is often challenging. Fortunately, P. had the benefit of strong family support. His mother became aware of his weight loss and sought initial pediatric care and monitoring. P. was hospitalized before any serious medical problem arose. For the acute crisis, medical stabilization and nutritional rehabilitation are the first steps. P. was put on a CVR monitor and nutritional regimen with close monitoring of calorie intake and laboratory values.

As P.'s zinc levels were below normal range, he received zinc supplementation with his multivitamins. Zinc supplementation has been shown to help promote weight gain in AN patients, even those who are not suffering from a zinc deficiency (Birmingham et al. 1994). It is not clear how zinc works in treatment of AN. One theory suggests that zinc plays an important role in the functioning of neurotransmitters, such as gamma-amino butyric acid (GABA) in various parts of the brain. AN patients commonly have low zinc levels, which adversely affects these functions. Zinc supplementation corrects these abnormalities resulting in clinical benefit in AN patients (Birmingham & Gritzner 2006). Patients with AN sometimes perceive a vegetarian diet as a healthier, low calorie alternative to other diets. Zinc deficiency is more common in vegetarians because of low bioavailability and higher phytate content, which inhibits zinc absorption. Thus those on a vegetarian diet are at increased risk of becoming zinc deficient. Monitoring of zinc level and supplementation should be considered in all AN patients.

TABLE 6. DSM IV-TR CRITERIA FOR ANOREXIA NERVOSA

| |
|---|
| Criteria |
| <ul style="list-style-type: none"> • Refusal to maintain body weight at or above a minimally normal weight for age and height: Weight loss leading to maintenance of body weight <85% of that expected or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected. • Intense fear of gaining weight or becoming fat, even though underweight. • Disturbance in the way one's body weight or shape are experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight. • Amenorrhea (at least three consecutive cycles) in post-menarchal girls and women. Amenorrhea is defined as periods occurring only following hormone (e.g., estrogen) administration. |
| Type |
| <ul style="list-style-type: none"> • Restricting type: During the current episode of anorexia nervosa, the person has not regularly engaged in binge-eating or purging behavior (self-induced vomiting or misuse of laxatives, diuretics, or enemas). • Binge-eating-purging type: During the current episode of anorexia nervosa, the person has regularly engaged in binge-eating or purging behavior (self-induced vomiting or the misuse of laxatives, diuretics, or enemas). |

American Psychiatric Association. (2000). Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR, (4th ed.), APA.

The U.S. Food and Drug Administration (FDA) has not yet approved any medication for the treatment of AN. Fluoxetine is the only FDA approved medication for treatment of bulimia nervosa (NIMH 2011). During hospitalization, P. was started on fluoxetine 10 mg and tolerated it well. However, given his short inpatient stay, it was too early to tell at discharge whether it was helpful. Perhaps a higher dose or a longer course could have proven beneficial. Fluoxetine is most effective, in the context of eating disorders, as treatment for comorbid depressive and anxiety symptoms. Though P. denied anxiety symptoms such as irritability, fatigue, poor concentration, muscle tension, and poor sleep, it was suspected that he had significant anxiety. Olanzapine was also considered, as it has shown to be effective for weight gain in AN. In addition, it could address weight-oriented obsessive-compulsive thinking, cognitive distortions, and excessive hostility (Brambilla et al. 2007). However, because of significant adverse effects, including sedation and dyslipidemia, it was felt that the potential risks outweighed the potential benefits of olanzapine for this adolescent (Norris et al. 2011).

Addressing the psychological and cognitive issues is essential. Patients with AN have been shown to possess poor decision-making abilities (Tchanturia et al. 2012) and are inclined to logically and rationally defend their food choices. Cognitive distortions are often difficult to correct, and in P.'s case there was limited success with CBT. Recent evidence suggests that the Maudsley approach, a form of family therapy in which parents take responsibility for feeding their child, is beneficial for younger patients. This approach has been shown to be effective in helping patients gain weight and improving eating habits in both the short and long term (Eisler et al. 2000; Lock et al. 2001). Research has also supported the use of a combined approach of medical attention and supportive psychotherapy in treating AN (McIntosh et al. 2005). However, given P.'s early adolescence, need to separate from his family, and lack of interest in family meetings, this was not beneficial, at least during the admission.

In summary, this case highlights the atypical but growing prevalence of eating disorders in adolescent boys. Cultural factors may also contribute. Clinicians must be aware and screen for eating disorders in all young patients, regardless of their gender or ethnicity.

Disclosures

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