

Anorexia Nervosa with Autonomic Instability

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Abstract

Anorexia nervosa (AN) is uncommon in developing societies like India and the clinicians need to have a high index of suspicion to identify it. We are describing an adolescent female who presented with cardiovascular complications (bradycardia and hypotension) of AN. She was initially managed in PICU and later multidisciplinary approach was followed for treating it. This case report reminds us that adolescents having thinness can also have eating disorder.

Keywords: Adolescents, Anorexia Nervosa, Undernutrition, Vasomotor instability

Introduction

Anorexia nervosa is characterized by deliberate weight loss, induced and sustained by the patient.¹ It involves significant overestimation of body size and shape with relentless pursuit of thinness.²

Anorexia nervosa has seldom been reported from developing countries like India despite having half of the adolescents undernourished. Seven cases of AN were reported from South India.³ Another study found prevalence of eating disorder 1.25% amongst juveniles attending psychiatric services in tertiary care center of CMC Vellore.⁴ Another psychiatry center in Delhi also reported two adolescents with AN in 2009.⁵ A survey of psychiatrists found that 45 participants had seen case(s) of AN in the previous year.⁶ We could not find any cases reported in non-psychiatry literature in India. We are reporting an adolescent girl who presented with severe thinness and cardiovascular instability.

Case Study

Our patient was a twelve-year-old female studying in seventh standard, living with her mother and stepfather. She presented with complaints of decreased oral intake for 4 months and pain in abdomen for 2 months. She had

a tendency to hide food and to oppose aggressively when fed with fatty food or asked to over feed. She perceived herself as overweight despite being severely thin. She did excessive physical exercise including skating for 2 hours in early morning almost daily for the last several months.

In school health congregation, she was advised to take medical help for low weight. The child was taken to a private hospital where many investigations including complete blood count, liver and kidney function test, lipid profile, iron studies, calcium and vitamin D levels, thyroid function test, work up for diabetes, and celiac disease were done. All reports were normal. The patient had not attained menarche. She was taking only one-fourth of the required calorie intake according to the guidelines by Indian Council of Medical Research, 2010, and half of the protein required for her age.

In OPD, she was found to have pulse rate 56 per minute, low volume, cold peripheries, respiratory rate 18 per minute, blood pressure 78/46 mm of Hg (below 5th centile for height⁷), and capillary refill time <3 sec. Anthropometric examination found height – 157 cm (85–95 centile, z-score – 0.01), weight – 33.5 kg (10–25 centile), BMI – 13.6 (<3 centile; z-score – 3.07) [Z-scores were calculated using WHO Anthroplus software],⁸ and sexual maturity staging

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revealed breast stage 2 and pubic hair at stage 3. The systemic examination was normal.

The child was diagnosed as a case of severe malnutrition, with anorexia nervosa (meeting the criteria of DSM-V) with hypotension.

In view of hypotension, she was admitted in Emergency where she received intravenous fluid bolus. She was later transferred to PICU for bradycardia and hypotension and remained there for 13 days for monitoring till autonomic instability improved. ECG showed bradycardia without arrhythmia. Serum electrolytes were normal and monitored daily. She was put on intake-output charting and 2 hourly feeds, daily weight charting, and psycho-education. She was under constant supervision and was not allowed to remain alone and do physical exercise. Pulse rate and volume, and blood pressure improved gradually to normal levels in 2 weeks.

HEADS evaluation and psychiatric consultation revealed body image issues, avoiding eating, and fear of getting fat. Her parents had marital conflicts and she was now living with her biological mother and stepfather. She was doing excessive exercise in order to get thin to become a film star.

She was discharged after 2 weeks' stay in PICU. She was managed in Center for Adolescent Health (CAH) clinic of Kalawati Saran Children's Hospital, Lady Hardinge Medical College, New Delhi. Counseling (psychotherapy) was done by a pediatrician, supported by a nurse counselor.

Her psychotherapies included individual therapy, i.e., one-to-one therapy sessions allowing her to explore her feelings, beliefs and behavior; family therapy to resolve family conflicts and to remove stressors originating from family; cognitive behavior therapy for identifying and challenging negative thoughts and experimenting with changing disruptive behavior and learning to tolerate uncomfortable feelings and reshaping the negative thoughts; and motivational therapy to help her to make positive decisions. Sequential counseling sessions were done. Homework (diary writing) was provided to her, in which she was asked to recognise and record automatic negative thoughts and advised to record what she had done to modify the negative thoughts into positive thoughts. As she wanted to be an actress, a meeting with a fashion model and actress was arranged to further consolidate the fact that very thin body is not a pre-requisite for fashion modeling or acting carrier in movies. She was involved in several group activities done by adolescents registered with CAH.

The dietician advised gradual building of diet; multivitamin and micronutrient supplements were added. Hospital social worker addressed various family issues regarding broken family. In her follow-up visits to adolescent health clinic,

various health issues, her hobbies, her likes and dislikes were discussed. Gradually, changes in her perception about body image were seen. After 4 weeks of counseling, parents reported increased oral intake of food along with fats and oils.

Weight was stable at 31 kg for a few days and then increased to 34.2 in 15 days of hospital stay. She continued gaining weight after discharge and was 50 kg 1 year after discharge and 55 kg 2 years after discharge.

Now after following this patient for nearly 3 years, the patient is doing well in tenth class; her current weight is 55 kg (75–97 centile), height 160 cm (z-score – 0.28) and BMI 21.5 (z-score 0.38).⁸ She has attained her menarche at 13 years 10 months and now has normal periods. She has no behavioral issues. Her BSQ (Body Shape Questionnaire)⁵ score is 52 (normal), Rosenberg self-esteem score is 21 (normal), EAT 26 questionnaire (Eating Attitudes Test) score – 12 (normal). However, we could not administer these questionnaires at the time of presentation.

Discussion

In AN, it is important to identify it early and intervene at the right time to prevent its complications. Anorexia nervosa can have clinical signs like marked weight loss, hypothermia, hypotension, brittle hair and nails, hyperkeratosis, lanugo, osteoporosis at young age, amenorrhea, bradycardia and arrhythmia.² These patients often need hospitalization (Table 1).

Table 1. Indications for Inpatient Medical Hospitalization²

Physical Laboratory
<ul style="list-style-type: none"> Heart rate <50 beats/min Other cardiac rhythm disturbances Blood pressure <80/50 mmHg Postural hypotension resulting in a >10 mmHg drop or a >25 beats/min increase Hypokalemia Hypophosphatemia Dehydration Body temperature <36.1°C (97°F) <80% healthy body weight Hepatic, cardiac, or renal compromise
Psychiatric
<ul style="list-style-type: none"> Suicidal intent and plan Very poor motivation to recover Preoccupation with ego-syntonic thoughts Coexisting psychiatric disorders

Early recognition of disordered eating is important as effective interventions can prevent the development of full-fledged eating disorders. In addition to body mass index, a screening tool such as SCOFF questionnaire can be

used, where five questions are asked each with a score of 1; a score >2 indicates that eating disorder is likely.⁹ Various self-reporting questionnaires have been developed to assess features of eating disorders. Most widely used are Eating Attitude Test (EAT) and Eating Disorder Examination Questionnaire (EDE-Q). The EAT scale is presented in a six-point, forced choice, self-report format which is easily administered and scored.¹⁰ Body shape questionnaire is a self-report measure of concerns about body shape, in particular experience of “feeling fat”. It is a six-point Likert scale where questions regarding how the patient has been feeling about their appearance over past four weeks are asked.¹¹ These questionnaires provide an idea about patient’s concerns regarding their weight and shape and its intensity by the score.

The energy deprivation and starvation associated with anorexia nervosa has profound consequences on the structure and function of cardiovascular system and can lead to several complications (Table2).

Table 2. Cardiovascular Complications of Anorexia Nervosa¹²

Structural Complications
<ul style="list-style-type: none"> • Pericardial effusion • Atherosclerotic vascular disease • Myocardial atrophy/decreased LV mass • Valvular prolapse • Myocardial prolapse
Repolarization and Conduction Abnormalities
<ul style="list-style-type: none"> • QT interval prolongation • Increased QT dispersion • Conduction delays • Junctional escape rhythms
Hemodynamic Changes
<ul style="list-style-type: none"> • Sinus bradycardia • Hypotension • Orthostatic changes • Autonomic dysfunction/heart rate variability changes
Peripheral Vascular Abnormalities
<ul style="list-style-type: none"> • Dysregulation of peripheral vasoconstriction/vasodilatation • Acrocyanosis • Arterial vasospasm

Our patient had sinus bradycardia with hypotension at presentation. In addition to thinness, low heart rate is most consistent physical finding of such patients. This finding is an adaptive response to conserve energy in setting of decreased calorie intake. Both systolic and diastolic blood pressure are found low in this condition.¹² Patients with severe sinus bradycardia should be admitted to the hospital in order to monitor the cardiac function and to plan gradual weight gain. Cardiac complications contribute significantly

to the morbidity and mortality associated with AN.

Nutritional rehabilitation, restoration of weight, and management of fluids and electrolytes are primary treatment interventions. Risks related to very low weight and dehydration along with those associated with electrolyte disturbances involved in re-feeding make the weight restoration phase particularly dangerous. Screening and ongoing monitoring for abnormalities in electrolytes, urea, creatinine, magnesium, phosphorus and postural changes in BP and pulse, as well as ECG are recommended. Echocardiograms should be considered in any patient with rapid weight loss (weight less than 80% of ideal body weight), and in those with resting supine pulses less than 50/minute or hypophosphatemia.⁷

Table 3. Suggested Monitoring for Patients with Active Eating Disorders.¹³

Specialized 24 hour care
Monitoring of hydration status and fluid retention
Meal support, monitoring of blood glucose and tolerance of nutrients
Vital signs especially pulse and BP
Frequent lab tests: electrolytes, BUN, creatinine, magnesium, phosphorus
Bathroom monitoring for purging, exercise and fall risk
Exercise protocols, including limited activity and bed rest

This case report calls for the attention of clinicians about eating disorder and its severity with a special emphasis on cardiovascular complications so that this life-threatening complication can be managed successfully.

Conflict of Interest: None

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