



Young man with anorexia nervosa

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AC and GS analysed and interpreted the patient data regarding the physical part of the disease and were major contributors in writing the manuscript. EM, MG and FF analysed and interpreted the data regarding the psychiatric aspects of the case. All authors read and

Anorexia nervosa is rare among men; it seems to be more severe than in women, due to diagnostic delay, higher prevalence of excessive exercise, vegetarianism, more severe bone deficiency and higher risk of fracture.¹⁻⁵

Case history

The patient is a 20-year-old Caucasian man, who was affected by a restricting type of anorexia nervosa for two years. He was first referred to a gastroenterology department because of weight loss and augmented liver enzymes. After discharge he was also followed by a psychiatric department without improvement; he was, therefore, referred to our Centre for Eating Disorders.

On admission he appeared to be severely ill, pale, emaciated with oedemic legs, petechias in the over-collar bone area, hypotrophic and hypotonic arms, a weight of 43.5 kg, a height of 1.80 m and a BMI of 13, blood pressure of 100/70 mmHg and heart rate of 46 bpm.

The patient's personal and family history did not include other psychiatric diseases.

His parents underlined 'perfectionism' as a core feature of his personality: he wants to be the best in everything he does and he always organizes and plans his life and his future.

The patient said his problem started when he was 17 years old: his girlfriend, affected by anorexia nervosa, used to tease him about being overweight, although he was normal. He started to do a lot of sports and lost 40% of his weight. As the eating disorder worsened, he began to

modify his personality features: he became depressed, withdrew from friends and became socially isolated. He also had to stop competitive swimming.

During the first visit, the patient appeared very weak, he seemed to be aware of his physical conditions, nevertheless he still had an intense fear of gaining weight: he continued to strictly limit his caloric intake. He completed a series of self-reported questionnaires: the Beck's Depression Inventory (BDI) indicated a severe level of depressive state; the Body Attitudes Questionnaire (BAQ) indicated a high level of difficulties in attitudes towards his body and body dissatisfaction. In the Eating Disorders Inventory (EDI), he reported high levels related to thinness, perfectionism, interpersonal distrust, maturity fears and a low level of self-awareness.

He accepted to be admitted to the Internal Medicine Department, even though he was more passive than truly compliant.

His Nutritional Risk Screening score was 5, according to the ESPEN Guidelines for Nutrition Screening 2002.⁶ His laboratory tests showed pancytopenia, with also low rates of glucose and transferrin, and high ferritin rates. Potassium and calcium were also low; he had low blood proteins, but a high relative value of albumin and high levels of liver enzymes. FSH and total testosterone were at the lower limits, whereas LH and free testosterone were under the normal range (Table 1). The abdomen ultrasound scan showed liver steatosis and colecystic stones; the chest X-rays were normal and the ECG showed evidence of sinus bradycardia. The bone marrow biopsy showed a

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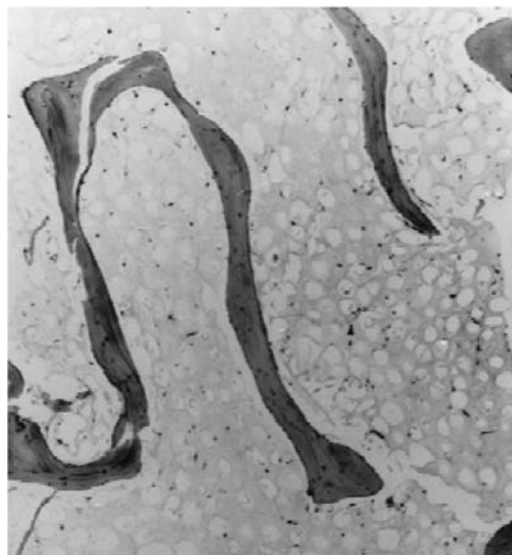
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Table 1
Laboratory tests results

<i>Lab test</i>	<i>Result</i>	<i>Normal range</i>
White blood cells	1400/ μ L	4000–11,000
Neutrophils	800/ μ L	1500–5000
Red blood cells	2,100,000/ μ L	4,500,000– 6,500,000
Haemoglobin	7.1 g/dl	13–18
Hematocrit	20%	40–54
MCV	92 fl	76–96
Platelets	133,000/ μ L	150,000– 450,000
CD4 ⁺ /CD8 ⁺	0.61	
HIV test	negative	negative
Gliccaemia	54 mg/dl	70–110
Transferrin	142 mg/dl	171–302
Ferritin	718 ng/ml	21–385
Na ⁺	148 mEq/l	136–146
K ⁺	2.9 mEq/l	3.7–5.5
Ca ⁺⁺	4 mEq/L	4.3–4.9
Plasma proteins	4.7 g/dl	6–8
Albumin	3.01 g/dl	2.5–4.0
Prealbumin	15 mg/dl	18–45
Gamma globulins	0.47 g/dl	0.68–1.58
ALT	86 U/L	<40
Gamma GT	70 U/l	11–50

Figure 1
Bone marrow gelatinous atrophy



typical gelatinous substitution of normal bone marrow cells (Figure 1).

While the patient was in hospital, his estimated basal energy expenditure (BEE), according to the Harris Benedict equation, was 1430 Kcal.⁷ To reduce the risks of a re-feeding syndrome and those related to his biliary stones disease, feeding was initially conducted via parenteral nutrition. Moreover, doctors recommended him not to do physical activity. In the first week he was monitored with daily checks of weight and laboratory tests. The re-feeding phase was completed in 40 days. An average 1.8 kg per week of body weight increase was achieved. He reached an adequate alimentary pattern, limited his physical activity and achieved better perception and acceptance of his body image. From a psychiatric point of view, he became progressively more aware of his illness, described as a 'barrier against growth'.

At the moment of discharge, his BMI was 16.9 and all the biochemical indexes were within the normal range. The follow-up was carried on in the Day Hospital of our Eating Disorders Centre by a multidisciplinary team. After 18 months, his BMI was 24.2 and all the biochemical and anthropometric parameters were in range: the team decided to discharge the patient and to refer him to periodic controls.

In this period, the patient also underwent a lumbar spine DXA that showed an important bone mineral density loss with BMD of 0.840 g/cm², Z score -2.5. A year later these values had improved (BMD = 0.993 g/cm², Z score -1.5).

Although 1.5 years after admission, LH and free testosterone were below the normal range and the patient said that he had a low libido and sexual activity, the GnRH test showed a normal response of FSH and LH. Two years after admission, when the thin mass was 25% of total patient's weight, testosterone and LH were in the normal range.

His mood progressively improved without any pharmacological treatment. He started studying again and enrolled at university.

Discussion

The patient was affected by a restricting type of anorexia nervosa with some typical peculiarities

of the male disorders such as the prevalence of compulsive physical exercise and perfectionism.

A delay in diagnosis can be noted: the beginning of symptoms was referred by the patient at the age of 17 years, while admission occurred when he was 20 years.

Regarding bone marrow, the gelatinous pattern is an uncommon condition characterized by marrow hypoplasia, fat atrophy and deposition of extracellular gelatinous materials. This condition represents the clinical consequences of a generalized illness (i.e. starvation, anorexia nervosa, malabsorption, malignant disease and HIV infection); the pathogenic mechanisms remain unclear.^{8,9} The majority of trials report a return to a normal bone marrow pattern with recovery of weight in patients who accepted to undergo a second biopsy.

In the healing phase, the DXA of the patient's lumbar spine still showed relevant low BMD, which improved one year later. A study showed that DXA can misinterpret the losses/gains of bone mineral density because it evaluates anorexia nervosa-induced changes in extra and intra-bone soft tissues. Other trials demonstrated that bone mineral mass flaws can be higher in men than in women with a higher risk of fracture. This is probably due to the loss of testosterone in anorexia nervosa patients and to its essential role in the maintenance of bone mass.^{5,10} The cornerstone of bone restoration appears to be weight gain: in our case no pharmacologic treatment was used.

Testosterone and LH were below the normal range and were associated with both low libido and little sexual activity. This condition recovered slowly: the hormone values returned to normal only two years after admission, although the improvement in sexual dysfunction in men

appears faster than in women and it seems to not be correlated with BMI and weight loss.¹¹

In this case, we describe how the disease's manifestations improved with the simple correction of the nutritional status. In particular, we were able to correct the bone mineral density, usually believed a hard to correct parameter, and the sexual hormones pattern with a careful multi-professional follow-up.

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