



Refeeding Syndrome Unveiled: A Compelling Case Report In Anorexia Nervosa

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Abstract

Background: Refeeding syndrome (RS) is a severe and potentially fatal complication of anorexia nervosa (AN). It arises due to changes in electrolyte levels and organ harm when shifting from a prolonged breakdown phase to a rebuilding phase, particularly when there's an overconsumption of nutrients.

Case Report

This report details the case of a 37-year-old woman admitted to SREE BALAJI MEDICAL COLLEGE AND HOSPITAL due to ongoing fatigue, reduced appetite, insomnia, and intermittent epigastric discomfort over six months as reported by the patient. Based on clinical observations and DSM-5 guidelines, she was diagnosed with severe anorexia nervosa (AN). Despite diligent care and monitoring of her nutritional intake, she developed hyponatremia, iron-deficiency anemia, and hypokalemia, indicating refeeding syndrome as evidenced by both laboratory tests and clinical symptoms. To address this, a dietary plan of 40 kcal/kg was implemented. She received meticulous care, with a focus on preventing

early dehydration, leading to satisfactory improvements in her weight and electrolyte balance.

Conclusion

Hence, it's crucial to strictly follow guidelines and closely monitor the refeeding process when nourishing patients with AN.

Background

Anorexia nervosa (AN) primarily affects young individuals and those in early adulthood, characterized by sustained self-starvation leading to severe weight loss and elevated mortality rates. This disorder results in significant malnutrition, accompanied by various physiological complications such as low blood pressure, slow heart rate, decreased body temperature, and amenorrhea in females. Males might experience reduced libido. Common behaviors among affected individuals include the use of appetite suppressants, diuretics, self-induced purging, and vomiting. AN has one of the highest mortality rates among mental disorders, with mortality rates in AN patients being substantially higher than the general population. The diagnostic criteria for

AN as per the American Psychiatric Association's DSM-5 include restricted food intake resulting in significantly low body weight based on age, gender, developmental trajectory, and overall health. There's a persistent fear of gaining weight, leading to compulsive behaviors like excessive exercise to prevent weight gain. Those with AN often have a distorted perception of their body image, considering themselves overweight even when severely underweight. Medical complications contribute to about half of the deaths in AN patients, highlighting its severe impact. A comprehensive study showed that AN patients had a mortality rate six times higher than the general population. Refeeding syndrome (RS) is a dangerous condition associated with refeeding, manifesting as severe electrolyte imbalances, thiamine deficiency, and dysfunction of multiple organs including the cardiovascular, neurological, and hematological systems. Patients at higher risk for RS include those weighing less than 70% of their ideal body weight, rapid weight loss, a body mass index (BMI) below a certain threshold, and deficiencies in essential nutrients before initiating feeding. In RS, there's a swift alteration in endocrine systems like insulin, thyroid, and adrenergic mechanisms, leading to considerable health risks. When treating patients recovering from a severe illness like AN, precautions are essential to prevent RS, which can be challenging given that early signs might be masked by renal deficiencies and acidosis. This article highlights a case of severe AN complicated by refeeding syndrome, which posed challenges in management despite rigorous monitoring.

Case Report

A 37-year-old girl complaining of weakness, fatigue, general malaise, and persistent widespread abdominal pain was taken to SREE BALAJI MEDICAL COLLEGE AND HOSPITAL to ongoing fatigue, reduced appetite,

insomnia, and intermittent epigastric discomfort over six months as reported by the patient. Her early medical history consisted of anorexia, early satiety, and severe weight loss. This weight loss caused her weight to decrease from 53 to 28 kg over the past two years. In addition, she also suffered from hair loss, sleep deprivation, aggressive behaviours, and constipation. She had secondary amenorrhea lasting 7–8 months. Her medical history was remarkable. The patient appeared alert, oriented, and cooperative during examinations. She seemed cachectic. Although the patient was ill, she had no symptoms of intoxication. Her appearance was cachectic. She had important features (blood pressure: 80/60, mmHg PR: 85/min, RR: 18, oral T: 36.8°C, BMI: 15.5 kg/m²). The skin and conjunctiva were pale. Sclera was not jaundiced. She did not have neck lymphadenopathy. Her thyroid size was normal. Her pupils were of normal size, parallel, and sensitive to light. Bilateral thoracic movements were similar, and expansion was normal. Heart sounds revealed normal heart sounds, and there were no distinct heart murmurs. Stomach, organs, and musculoskeletal examinations were normal, but there was muscle weakness. Additional examinations were conducted to rule out various diseases, such as endocrine deficiencies, weight loss issues, low blood pressure, cortisol levels in the morning, and adrenal insufficiencies. The initial laboratory findings indicated a mild elevation in liver enzymes, including alanine aminotransferase and aspartate aminotransferase, while the rest of the tests showed normal results. Tests for ceruloplasmin, immunoelectrophoretic (especially IgG), ANA, ASMA, anti-LKM, HBS-Ag, HCV-Ab, HBC-Ab, and HAV-Ab were negative. Furthermore, tests for ferritin, serum iron, TIBC, PT, PTT, INR, and Alb came back within normal ranges. Evaluations for myopathy and lower motor

neuron disorders yielded normal results. While thyroid issues seemed less likely based on the lab tests, levels of FSH, LH, and estradiol were found to be low. The patient's absence of menstrual periods could be attributed to hypothalamic amenorrhea stemming from significant weight loss. An enlargement of the left liver lobe was evident, extending past the midline and being noticeable on the left side of the abdomen. Endoscopic examination indicated Class A GERD (based on the LA classification). Colonoscopy showed inflammation and swelling of the mucus in the rectal area. Eye exams did not detect any signs of Kayser-Fleischer ring, papillae, or macula abnormalities. After excluding other potential medical causes, the patient was diagnosed with severe AN, based on her symptoms and the criteria outlined in the DSM-5. Consequently, a specific diet plan was recommended for her. Dedicated nurses were trained appropriately for the patient's care. Despite receiving supplementation, the patient's serum phosphate and potassium levels remained deficient. Swelling was evident around her ankles. Such complications can become life-threatening if not promptly identified and addressed, primarily through nutritional therapy. Based on her clinical and lab findings, the patient was determined to have refeeding syndrome, a condition that can arise due to fluid and electrolyte shifts when malnourished individuals undergo active nutritional restoration. In this context, patients are typically prescribed a diet of 40 kcal/kg based on their specific needs. Upon subsequent monitoring, there was an observable improvement in liver function along with normalized serum electrolyte levels. Investigations are mentioned below:

Table 1

Haemoglobin	9.4
PCV	34.80
RBC	3.44
TC	5850
SODIUM	132.6
POTASSIUM	3.00
CHLORIDE	98.66
2D ECHO	EF- 60% BRADYCARDIA DURING STUDY NO RWMA
UREA	12
CREATININE	0.6
URIC ACID	1.80
CALCIUM	8.60
PHOSPHOROUS	1.90
Total bilirubin	1.6
SGOT	59
SGPT	108
ALP	128

Table 2

ANTI –dsDNA	NEGATIVE
PERIPHERAL SMEAR	BICYTOPENIA
THYROID PROFILE	NORMAL
SERUM FERRITIN	574
ALDOLASE	9

Discussion

In this report, a case of a patient suffering from severe anorexia nervosa and subsequent refeeding syndrome is outlined briefly. The diagnostic approach for individuals with severe anorexia nervosa and associated refeeding syndrome focuses on identifying muscle weakness stemming from significant starvation-induced muscle wasting. Such cases of anorexia nervosa might be infrequently observed, overlooked, or underreported. Restoring weight stands as a primary objective in treating

severe anorexia nervosa patients. Evidence suggests that increased calorie consumption and moderate weight recovery can naturally alleviate or resolve symptoms like amenorrhea, liver abnormalities, digestive issues, and overall physical health concerns. Vigilant monitoring of medical, metabolic, and psychological markers is crucial during the initial phases of anorexia nervosa to pinpoint factors that might escalate the condition. Swift diagnosis and appropriate interventions, both non-pharmacological and pharmacological, are essential to mitigate the progression and potential complications of this life-threatening disorder. Although the association between anorexia nervosa and refeeding syndrome is somewhat limited, some documented cases have linked the condition primarily to adolescents and young adults. Resuming eating habits after an extended period of starvation can precipitate heart complications. The underlying mechanisms of refeeding syndrome are better understood today. Phosphate plays a pivotal role in various biochemical reactions, including the conversion of adenosine diphosphate and adenosine monophosphate to adenosine triphosphate. When serum phosphate levels drop below the typical range of 0.85–1.40 mmol/L, symptoms of refeeding syndrome, such as muscle breakdown, cardiac issues, respiratory challenges, and even death, can manifest. Recognizing the early signs of refeeding syndrome can be challenging due to their nonspecific nature. Both intravenous and oral feeding methods can trigger this syndrome. Notably, in the UK, individuals with conditions like anorexia nervosa, cancer, alcoholism, and specific postoperative patients are identified as vulnerable to refeeding syndrome.

Conclusion

This study served a dual purpose: first, it reviewed and consolidated existing literature on refeeding syndrome cases associated with anorexia nervosa. This review aims

to facilitate prompt recognition and treatment based on previously documented cases. Additionally, we shared our insights from managing young patients with both anorexia nervosa and refeeding syndrome. Given the complexities of treating these conditions and other relevant populations, there remains a need for further research to refine diagnostic and therapeutic approaches.

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