

Hyperthyroidism - Presenting as Cachexia in Young Adult

Dr. Siraj S Vadhvaniya*, Dr. Pramod R Jha**, Dr. Raajan Kantharia***

¹3rd Year General Medicine Student, Dhraj Hospital, Sumandeep Vidhyapeeth University, Piparia-391 760

²Head of Unit and Associate Professor, Dhraj Hospital, Sumandeep Vidhyapeeth University, Piparia-391 760

³Assistant Professor, Dhraj Hospital, Sumandeep Vidhyapeeth University, Piparia-391 760

Abstract: Cachexia is associated with increased mortality and affects more than 5 million people in the United States. Cachexia and associated malnutrition result in physical and psychological consequences that affect both morbidity and mortality. Cachexia can have a profound impact on quality of life, symptom burden and a patient's sense of dignity. In our case report a patient presented with features of cachexia; at the time of presentation we put differential diagnosis are either any malignancy or HIV related cachexia, which on serological evaluation and investigation directed the differentials towards other causes for such a cachexia. He underwent Routine blood tests associated with Thyroid function tests in view of clinical features. The thyroid function tests suggested Primary hyperthyroidism. Thus in conclusion there should be very high suspicion in patients with significant weight loss who are difficult to control. Preferably the thyroid function tests to be performed in all cases who present with significant weight loss.

Keywords: Hyperthyroidism, cachexia, HIV, young adult, thyrotoxicosis

1. Introduction

Definition

Wasting is a common condition in children during their development and is commonly attributed to undernourishment. With increasing age under nutrition is less common. Chronic wasting to such an extent as to produce cachexia is not commonly heard of in adults.

Anorexia and cachexia are frequent complications of both HIV infection and cancer. Involuntary weight loss and associated malnutrition result in physical and psychological consequences that affect both morbidity and mortality¹.

About half of all cancer patients show a syndrome of cachexia, characterized by anorexia, loss of adipose tissue and skeletal muscle mass. Cachexia can have a profound impact on quality of life, symptom burden and a patient's sense of dignity².

Thyroid gland produces a catabolic hormone and is very important in the metabolism of various substances in the body. Excess of thyroid hormone produces a hyper metabolic state which has varied clinical features. Thyrotoxicosis is defined as the state of thyroid hormone excess. Major etiologies of thyrotoxicosis are hyperthyroidism caused by Grave's disease, toxic multinodular goiter and toxic adenomas⁴. Mostly patient presents with symptoms of hyperactivity, irritability, heat intolerance, palpitations, fatigue, weakness, weight loss with increased appetite, diarrhea, oligomenorrhea, loss of libido⁵. Signs seen in patient of thyrotoxicosis are, tachycardia, atrial fibrillation in elderly, tremors, goiter, warm and moist skin, muscle weakness, proximal myopathy⁵.

We hereby report a case of cachexia in a young male with thyrotoxicosis.

2. Case Presentation

A 32 year old farmer presented with low grade fever with evening rise and progressive exertional breathlessness for last 1 year and, cough and weight loss of around 12 kg loss in past 5 to 6 months; frequent loose stools for 2 months.

No past history of any major illness.

On examination

Patient was severely malnourished, his mid arm circumference was 17 cm in right arm and 16 cm in left arm. fine tremors and exophthalmos was present. He was afebrile, with an irregularly irregular pulse of 134/min with apex pulse deficit was 15, Blood pressure was 110/66 mm of Hg. Respiratory Rate was 34/min, abdomino-thoracic in type rhythm, SPO2 96% at room air, pallor present; No oedema/lymphadenopathy/icterus/cynosis/clubbing.

Anthropometry: Height 1.61 meter and weight 38 kilogram

And his BMI is 14.67 kg/m² and mid arm circumference on right arm was 17 cm and on left arm 16 cm.

Triceps skin fold thickness was 4mm

On examination of neck, a midline neck swelling was present which was nodular and it moved with deglutition and protrusion of tongue.

On respiratory system examination tachypnea present, air entry bilateral present, No any added sound present.

Cardiovascular system examination tachycardia present with irregular heart rate with s3 gallop present.

Central nervous system examination patient conscious and oriented to time place and person, was anxious.

Abdominal system soft, no organomegaly.

Blood Investigations	
Hb	9.1 gm%
Total count	4000 cmm (N-80,L-11,E-4,M-5)
Platelets	1.0 lacs/cmm
Random blood sugar	118 mg/dl
Urine examination	NORMAL
Blood Urea	27 mg%
S.creatinin	0.6mg%
S.bilirubin	1.8 mg/dL(D-0.8,I-1.0)
SGPT	18 U/L
SGOT	20 U/L
S.electrolytes	With in normal limits
HIV ELISA & WESTERN BLOT	Non-reactive
HBsAg	Negative
HCV	Negative
Thyroid function test	
1.Thyroid stimulating hormone	<0.01 μ U/mL(N:0.39-5 μ U/mL)
2.Free T3	>25 pg/mL (N:2.1-3.8 pg/ml)
3.Free T4	>9 ng/dL (N:0.8-2 ng/dL)
Anti Thyroidperoxidase Antibody (TPO)	>1000 IU/mL (N:0-5.61 IU/mL)
ESR	

Other investigations

Stool examination	Normal
USG Neck	well defined round to oval hyperechoic lesion of size 7*6 mm noted in right lobe of thyroid , both lobe of thyroid shows altered echo texture with increased vascularity suggestive of thyroiditis.
ECG	Atrial fibrillation
2D Echocardiography	With in normal limits LVEF 65%

Based on above facts and figures diagnosis of cachexia with Thyroiditis with thyrotoxicosis with atrial fibrillation with anemia was made.

He was treated with tablet neomecazole ,tablet propranolol , heamatinics.



3. Discussion

Cachexia is associated with increased mortality and affects more than 5 million people in United States.Clinically, cachexia manifests with excessive weight loss in the setting of ongoing disease, usually with disproportionate muscle wasting. An excess amount of thyroid hormone leads to an increased metabolic rate, which affects almost every system in the body.

Pathogenesis of cachexia are following;

Cytokines play central role in the pathogenesis of cachexia .They are responsible for immunomodulation and have been implicated in the etiology of anorexia, weight loss, cognitive dysfunction, anemia, and frailty. Excessive elaboration of

proinflammatory cytokines such as interleukin (IL)1, IL-2, interferon and tumor necrosis factor(TNF) is probably the most common cause of cachexia observed in ill patients⁶.Cytokines activate nuclear transcription factor κ B (NF- κ B), which result in decreased muscle protein synthesis.

Other mediators of cachexia syndrome

- 1) Testosterone: Low testosterone concentrations are associated with elevated circulating leptin concentrations. Leptin is an anorectic and lipolytic hormone produced by adipocytes . These changes probably account for age- and disease-related anorexia, weight loss, and cachexia in some hypogonadal men.

- 2) Insulin like growth factor I 2..Myostatin 3. Adrenal hormones

Diagnostic criteria of cachexia

- Unintentional weight loss (>5%)
- BMI a. >20 in those aged >65 y b. >22 in those aged >65 y
- Albumin > 35 g/L (3.5 g/dL)
- Low fat-free mass (lowest 10%)
- Evidence of cytokine excess (eg, elevated C-reactive protein)

Cachexia due to chronic illness mostly occurs in following disease

Cardiac cachexia	Chronic renal failure	
Chronic obstructive pulmonary disease	Anorexia cachexia syndrome in cancer	Anorexia cachexia syndrome in cancer
Rheumatoid arthritis related cachexia	AIDS-related cachexia (wasting syndrome)	Aging and weight loss

Here we report a young patient presented with features of wasting syndrome ; differential diagnosis were any malignancy or HIV related cachexia , which on radiological and serological evaluation were ruled out. He underwent thyroid function tests in view of clinical features like fine tremors in both hands, tachypnea, tachycardia, severe weight loss and midline neck swelling. The thyroid function tests suggested decrease level of TSH and markedly increased T3/T4 with raised Anti TPO levels suggested presence of Primary hyperthyroidism. USG Neck findings also suggestive of thyroiditis. The difficulty of differentiating between HIV associated wasting syndrome , malignancy and Thyroid disease on the basis of symptomatology is great considering the similar features, however clinically presence of midline swelling points towards Hyperthyroidism. The patient was treated with tab. Carbimazole 10mg bd dose and a course of capsule amoxicillin , within few weeks he started gaining weight and relief from fever as well as anorexia.

4. Conclusion

Thus, patient with cachexia should be investigated for thyroid disorder even in young adults

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