

Thyroid Storm: An Unusual Presentation

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Abstract: A 32-year old female patient was hospitalized in a referral hospital with fever, diarrhea, seizures and altered sensorium. On physical examination, patient was febrile with tachycardia. Suspecting the diagnosis of thyroid storm clinically, the patient was started on aggressive antithyroid treatment after which she showed marked clinical improvement.

Introduction

Thyroid storm is a rare manifestation of thyrotoxicosis, commonly occurring in females from third to sixth decade of life and is usually fatal if left untreated. Classic clinical presentation includes fever, tachycardia, tremors, nausea, vomiting, diarrhea, dehydration, delirium and coma. It may involve multiple organs and present as cardiovascular, gastrointestinal or central nervous system symptoms. Thyroid storm is mainly a clinical diagnosis but becomes relatively difficult to diagnose in the absence of clinical clues. High index of suspicion and meticulous diagnosis with prompt treatment is essential to reduce the mortality rate in this otherwise fatal entity.

Case history

A 32-year old female was hospitalized with eight days history of fever and two days history of diarrhea and altered sensorium. Before admission she was reported to be highly irritable and restless, with generalized tonic-clonic seizures. Her mental status was on a declining mode since her admission. No history regarding any previous illness or hospital admissions could be obtained, but a positive history of palpitations (a subjective phenomenon) was obtained from her relations. She was febrile - 38°C, pulse rate- 140 /min regular, blood pressure- 100/80 mm of Hg, respiratory rate- 18 / min. She had exophthalmos with a typical hyperthyroid (anxious) look. Thyroid was invisible in and around the neck. There were no signs of meningeal irritation. Fundus was normal. No neurological deficits were found, cardiovascular system was normal except tachycardia, breath sounds normal, abdomen was soft and not tender. No mass was palpable. There was no abnormality of hemogram. Blood glucose levels, renal and liver function tests, serum electrolytes were all normal. CT scan of the brain was normal. ECG showed sinus tachycardia. Her thyroid profile was sent for evaluation. Although a bit confusing at this point of time, the constellation of signs and symptoms suggested that this may be a case of thyroid storm, although a possibility of gram-negative septicemia could not be ruled out. Another possibility of encephalitis was kept in mind, but no signs of raised ICT deferred us from doing CSF analysis. The patient was started on antithyroid drugs pending thyroid hormone reports. She was started on propylthiouracil 400 mg tid, propranolol 40 mg bd and parenteral dexamethasone 8 mg bd. Antibiotics (augmentin and gentamycin, i.v) and

fluids were also started. Her thyroid functions confirmed hyperthyroid state (TSH- 0.3 mU/L; T₄- 198 nmol/L; T₃- 2.6 nmol/L). Her clinical condition gradually improved after 3 months treatment. Diarrhea stopped, fever subsided, and sleeping pulse rate was stabilized to 80 bpm in sinus rhythm. Her generalized seizures and agitation decreased. After considerable improvement in her condition in about ten days time, she was discharged in an euthyroid state, conscious and well oriented. On follow up, she was relieved of all her symptoms and carried out routine activities in a positive frame of mind. However, she was to put on carbimazole prophylaxis, but she was lost in subsequent.

Discussion

Thyroid storm- a dramatic exacerbation of existing hyperthyroidism of sudden onset associated with hyperthermia, tachycardia and CNS symptomatology remains a life threatening disease if left untreated. On account of an overlapping of the symptoms, precipitating conditions and complications, a clinical diagnosis is not easy and is often established too late [1]. Approximately 1 – 2 % of the patients with hyperthyroidism progress to thyroid storm often precipitated by a physiologically stressful event [2]. Early recognition and treatment of thyroid storm has helped in reducing both the morbidity and mortality rate from this disorder. Many factors trigger thyroid storm and often in emergency department, a prompt diagnosis has to be made and empirical treatment to be started on clinical grounds awaiting laboratory reports. Here the diagnosis of thyroid storm was made entirely on clinical grounds. Earlier another report showed that a previously healthy young woman in whom suspected gastrointestinal sepsis complicated by CNS disturbances masked the major symptoms of thyroid storm [3]. It seems that, an acute elevation of FT₃ or FT₄ in thyrotoxic patients may produce acute decompensation. However no absolute levels of serum T₃ or T₄ exists, above which thyroid storm occurs inevitably [4]. T₄ may rarely be normal or even decreasing because of coexisting non-thyroidal illness [5]. Thyroid storm is a systemic disorder and overactivity of sympathetic nervous system contributes to its clinical features. Hence normal response to stress is increased. The mechanism to explain these responses are not well understood since serum catecholamine levels are not increased. Studies suggest that enhanced sympathetic activity in thyroid storm results from an increased number of β-receptors under the influence of thyroid hormones on target organs such as myocardium, which contributes to a supersensitivity to even normal levels of catecholamines [6]. The effectiveness of β- blockers as a treatment modality in hyperthyroid states supports this hypothesis. The cardiac and nervous system manifestations are hence due to the hypersensitivity and extra binding sites of catecholamines in the myocardium and nervous tissue. Treatment should never be delayed as it gives good results. In this case febrile illness might have triggered thyroid storm and thus the woman presented with cardiac (tachycardia), gastrointestinal (diarrhea) and CNS (altered sensorium with generalized tonic clonic seizures) manifestations. So this patient clearly looks to be a case of unrecognized hyperthyroidism where there was a sudden outburst of symptoms due to triggering factors, eventually landed up as a medical emergency.

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