

A Case Report on Ischaemic Stroke Due to Hyperthyroidism

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Abstract

A 39yr old primary school teacher presented with fever, headache, and palpitation. The fever was described as high grade, intermittent, with a generalized throbbing headache that was temporarily relieved with simple analgesic. While waiting for a medical attention at the emergency unit, he collapsed and developed a generalized tonic-clonic convulsion that lasted about 3 minutes. After the seizures he was noticed to have developed a left hemiplegia. Prior to this admission, he was said to have had a goiter 5 years ago which was poorly managed. On examination, his Thyroid Function Tests (TFT) was abnormal and consistent with that of hyperthyroidism.

Key words: Palpitation; Headache; Convulsion; Hemiplegia; Hyperthyroidism

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Introduction

Hyperthyroidism is a common endocrine disorder, affecting 0.5% to 2% of the population, and young adults comprise a significant proportion of those with this disorder [1,2]. The cardiovascular manifestations of thyrotoxicosis, including tachycardia, a widened pulse pressure, a brisk carotid and peripheral arterial pulsation, a hyperkinetic cardiac apex, and loud first heart sound have long been recognized and are a cornerstone for clinical diagnosis [3–11]. An increased incidence of atrial fibrillation has also been consistently reported in patients with overt hyperthyroidism [1,12]. Although hyperthyroidism may involve short-term and long-term cardiovascular consequences [13], data concerning the association between hyperthyroidism and cardiovascular outcomes are inconsistent [14]. Hyperthyroidism is well-known to be associated with an increased risk of atrial fibrillation among people aged 60 years or older [15], and there is a high risk for cardioembolic stroke in hyperthyroidism patients with atrial fibrillation [16]. However, there is a paucity of data relating to the risk of stroke in young adults with hyperthyroidism.

A Case Report

A 39yr old man, a teacher in a primary school presented to the Emergency Unit of Barau Dikko Teaching Hospital Kaduna, Nigeria, with a complaint of fever, headache, and palpitation. The fever was described as high grade, intermittent, not associated with chills and rigors. In addition, there was a generalized throbbing headache that was temporarily relieved with simple analgesic. However, while still at the emergency unit, he was noticed to have collapsed from a chair, and started convulsing (a generalized tonic-clonic) that lasted about 3 minutes. After the seizures he developed in ability to move his left half of the body and had a left facial nerve palsy.

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The patient has a history of goiter which was diagnosed 5 years ago and at that time he presented at a different health facility with a history of neck swelling, heat intolerance, excessive sweating, weight loss, and increased appetite. His Thyroid Function Test (TFT) then was; T₄ = 52.9 umol/l, T₃=22.0, and TSH= 0.02 iu/l. He was treated carbimazole, lisinopril, frusemide and other medications that he could not remember. The patient denied family history of goiter or neuropsychiatric illness, but both parents are hypertensives as well as diabetics. He was treated and got better, however, he stopped taking his drugs and absconded from follow up clinics. During his recent admission, he presented with palpitation and chest pain. On examination, the patient was conscious and looked well-nourished and hydrated. He was pyrexia (Temp was 38 °C), not pale, not cyanosed, no pedal edema nor peripheral lymph nodes, and no obvious neck swelling. His pulse rate was 130 beats per minute, blood pressure was 110/70 mmHg. He had no raised Jugular venous pressure and there was no neck or carotid bruit. His heart sounds were normal, and no displacement of apex beat. Apart from the left hemiplegia all the other systemic organs were intact.

Investigations and treatment

A CT brain scan showed areas of infarction in the right frontal-parietal region of the brain. His serum urea and electrolytes were within normal limits. Serum calcium 1.37mmol/l (2.25-2.27), Phosphorus 1.65mmol/l (0.8-1.6), Uric acid 238µmol/l (202-416), Cholesterol 3.2mmol/l (Triglyceride 0.89mmol/l (0-1.7), HDL 1.01mmol/l (0.78-1.55), LDL 1.7mmol/l (0.37). A repeat TFT showed T₄= 22.4 ug/dl, T₃ = 5.82 ug/dl, and TSH = 0.02 iu/l. The ECG result showed sinus tachycardia. The patient was commenced on the following regimen; Tabs atorvastatin 20mg OD, Tabs vasoprin 75mg OD, Tabs carbimazole 10mg TDS, Tabs atenolol 50mg OD, Tabs frusemide 40mg OD, Tabs rabeprazole 20mg OD, and sodium valproate 200 mg BD. He was referred to physiotherapy for rehabilitation. His neurological condition improved within two weeks of commencing treatment, and had a normal sinus rhythm.

Discussion

A case of stroke due to poorly managed hyperthyroid goitre has been presented. Hyperthyroidism is a well-known risk factor for ischaemic stroke in young patients. Atrial fibrillation (AF) occurs frequently in patients with hyperthyroidism and may be the presenting symptom [12]. However, AF and cardioembolic stroke are not the only underlying pathological mechanisms of acute cerebral ischemia in thyroid disease, Cerebral Venous Thrombosis (CVT) has also been reported as a cerebrovascular complication of hyperthyroidism, due to the hypercoagulable state induced by thyrotoxicosis. [17-22] The first clinical association was made in 1913, when Kaliebe described a venous cerebral thrombosis in a thyrotoxic patient. [18] Since then, the incidence of vascular cerebral disease has been estimated at 1:250 000 cases/year, with mortality ranging between 5% and 30%. [17] The procoagulant influences in the thyrotoxic state are haemodynamic factors, dehydration and venous stasis caused by the goitre. Various studies suggest a prevalence of 10% to 15% in patients with hyperthyroidism, and it is more common in men than in women [23].

Conclusion

Our study shows an association between hyperthyroidism and the risk of ischemic stroke in young adults. A need for thorough evaluation may help elucidate the aetiology of stroke in young adults. This report therefore, indicates a need for a thyroid function tests in all patients presenting with a cardiac disease or stroke.

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