Unusual presentation of thyrotoxicosis - A case report and review of literature

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Summary

Background: **The majority of patients with thyrotoxicosis are readily diagnosed clinically. It must be accepted however that not every patient presents with the characteristic picture. Thyrotoxicosis occasionally presents in an unknown or atypical fashion in which the diagnosis may not be obvious.**

Case report: **A 45-year-old woman presented with choreoathetoid movements of the right upper limb, persistent vomiting and generalized body weakness. Over the next few weeks, the clinical picture slowly evolved to give the characteristic symptoms and signs of thyrotoxicosis, which were not evident at presentation. Thyroid function tests revealed elevated serum thyroxine and triiodothyronine as well as low thyroid stimulating hormone concentrations, confirming the diagnosis of thyrotoxicosis.**

Conclusion: **This case illustrates unusual initial presenting features of thyrotoxicosis, which long preceded the development of the characteristic and more common manifestations. This led to a delay in the diagnosis. Awareness of these atypical presentations will further assist the physician to make a timely and cost effective diagnosis of this condition.**

Key-words: *Thyrotoxicosis, Atypical, Choreo-athetosis, Vomiting, Weakness.*

Résumé

Introduction: La plus grande partie des patients atteints de la thyrotoxicose sont facilement diagnostiqués cliniquement. Toutfois, on doit souligner que ce n'est pas tous les patients qui se présentent avec le même trait caractéristique.
Parfois, la thyrotoxicose arrive d'une manière inconnue ou atypique dont le diagnostic pourrait ne pas etre évident.

Rapport de cas: Une femme âgée de 45 ans s'est présentée atteinte du mouvement choreoathéroid du membre supérieur du coté droite, vomissements continuels et la faiblesse du corps en général. Pendant les semaines à venir, les images cliniques commencaient à se développer lentement pour donner des symptômes et signes caractéristiques de la thyrotoxicose, qui n'étaient pas évident pendant la présentation.

L'examen du fonctionnement de la thyroide a révélé un thyroxine sérum élevé et triiodothyronine de même qu' une baisse de la thyroide qui stimule la concentration des hormones, ce qui confirme le diagnostic de la thyrotoxicose.

Conclusion: Ce cas fait une illustration des traits premier peu commun de la thyrotoxicose qui se présente et avait bein longtemps précédé le développement des traits caractéristiques et des manifestations plus fréquentes. Ceci a provoqué un retard dans le diagnostic. La prise de conscience de ces présentations atypique va aider de plus le médicine de faire un diagnostic opportun et rentable de cette condition.

Introduction

The majority of patients with thyrotoxicosis are readily diagnosed clinically. The complaints of nervousness, heat intolerance, weight loss (often despite increased appetite), sweating, palpitations and diarrhoea make a characteristic anamnesis[1]. Even without ophthalmopathy, the supporting clinical signs of a staring gaze, lid lag, tachycardia, tremors of fingers, hot moist skin and diffuse goiter make an unmistakable constellation[1].

It must be accepted however that not every patient presents with the characteristic picture. Even excluding the syndrome of euthyroid ophthalmopathy, there are many oligosymptomatic thyrotoxic patients. The case we describe is that of a middle-aged woman whose initial manifestations of thyrotoxicosis were choreoathetoid movements, persistent vomiting and generalized body weakness. We also review the literature on the subject matter.

Case report

Mrs. F.A, a 45-year-old trader presented with a two-week history of insidious onset of involuntary movements of the right upper limb, generalized body weakness and recurrent effortless vomiting. The vomiting was predominantly postprandial. She also complained of a throbbing frontal headache without any accompanying visual disturbances or loss of consciousness. She had previously being in good health and had no history of seizures or head trauma. She had episodes of low-grade fever in the preceding weeks for which she had taken antimalarial therapy. A week prior to presentation she developed mild generalized abdominal pain and loose non-mucoid, non-bloody stools on account of which she took a 5-day course of antibiotics.

Physical examination revealed a middle-aged woman with normal clinical findings apart from continuous jerky, irregular and sometimes writhing involuntary movements of the right upper limb. She had a pulse rate of 100 beats per minute. Other clinical findings were essentially normal, apart from truncal obesity.

Her cranial nerves were intact and apart from the involuntary movements of the right upper limb, no other abnormality was found in the neurological system. The impression was that of a choreo-athetoid movement disorder of unknown etiology. A space-occupying lesion of the central nervous system was to be excluded.

She was commenced on Intravenous fluids, Metoclopramide-10 mg three times daily and Tabs Artane-2 mg three times daily. Her serum electrolytes, urea, creatinine, calcium and phosphate concentrations were within normal limits with the exception of the serum potassium concentration, which was below normal limits (3.0 meq/L), following which potassium replacement therapy was also instituted. She had a packed cell volume of 32% with a total white cell count of 4,200 per cubic millimeter (48% neutrophils, 38% lymphocytes, 10% monocytes and 4% eosinophils). Erythrocyte sedimentation rate was 10mm/hour. Results of urinalysis, liver function test and blood glucose were normal.

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A computerized tomographic scan of the brain revealed no abnormality. Her chest x-ray revealed mild cardiomegaly with a left ventricular preponderance. An electrocardiogram revealed sinus tachycardia with voltage criteria for left ventricular hypertrophy (LVH). An abdomino-pelvic scan was performed and this revealed no abnormalities. A pregnancy test was performed and this was negative. A retroviral screen was non reactive.

By the end of the first week of admission, the frontal headache, loose stools and involuntary movements of the right upper limb had subsided, but she continued to complain of profound generalized weakness and vomited repeatedly. Muscle power was grade 3 globally. Cumulative daily reviews noted recurrent vomiting, severe generalized muscular weakness and progressive weight loss. Her packed cell volume dropped to 28% over a period of 4 weeks, while she was on admission.

By the 4th week of admission, the patient was noted to have developed fine tremors of her outstretched hands and persistent tachycardia, although she never complained of palpitations. By then she had lost approximately 10 kg of her original body weight and was now noted to have a slight thyromegaly. At this point, a provisional diagnosis of thyrotoxicosis was made and a thyroid function test was requested for. A more florid picture in keeping with thyrotoxicosis evolved with the patient now noticed to have warm palms, palmar erythema and fine tremors of her outstretched hands. She now had a staring gaze and lid retraction, but there was no exophthalmos.

Results of the thyroid function test were finally received and confirmed the diagnosis of thyrotoxicosis, with a markedly elevated total serum Triiodothyronine (T_3) and total serum thyroxine (T_4) and low serum Thyroid stimulating hormone (TSH). Total serum T_3 was reported as >8ng/ml (normal range-0.8-2.0 ng/ml), Total serum T_4 was >200 ng/ml (normal range-45-115ng/ml) and serum TSH was < 0.3miu/ml (normal range-0.3-6.5 miu/ml). Facilities for antithyroid antibody screening were not available.

An impression of thyrotoxicosis was made and she was subsequently commenced on antithyroid drugs (Tabs Carbimazole- 45 mg daily and Tabs propranolol-40 mg three times daily.

She made remarkable clinical progress, with complete resolution of the vomiting and she regained normal muscle strength. She was discharged home on the 17th day of antithyroid therapy for follow up in the medical out patient clinic. Since discharge, she has been seen twice in the outpatient clinic and has demonstrated sustained clinical progress.

Discussion

Thyrotoxicosis occasionally presents in an unknown or atypical fashion in which the diagnosis may not be obvious[2]. In the patient we have described, choreoathetosis, vomiting and generalized muscular weakness were the initial presenting complaints. The classical clinical features of thyrotoxicosis became evident much later in the course of the patient's illness.

Choreoathetosis associated with hyperthyroidism has been known since the early twentieth century[3]. It has been described as a presenting feature of thyrotoxicosis and may be the initial manifestation of thyrotoxicosis[4-9]. It is suggested that the tremor of mild thyrotoxicosis is one end of a spectrum and choreo-athetosis represents the most severe form of in-coordination[5]. A distinctive feature of reported cases of hyperthyroid chorea has been the resolution of chorea as thyrotoxicosis abates with treatment[5-8]. Surprisingly, in the patient we have reported, the choreo-athetoid movements disappeared spontaneously even before the diagnosis of thyrotoxicosis was made. Treatment with beta-adrenergic blockers has been reported to produce improvement in the choreiform movements, even with no associated change in protein bound iodine (PBI) or serum thyroxine[7,8]. Although the concentration of circulating catecholamines in patients with thyrotoxicosis is reported to be normal[2], many of the signs and symptoms in thyrotoxicosis have been explained by the augmentation effect of the catecholamines at the receptor site by thyroxine[10]. The beneficial effects of propranolol have been proposed to be due to its blockade of the action of thyroxine on catecholamine in the basal ganglia.

More recently it has been postulated that thyrotoxicosis causes specific effects on the neurotransmitter system in the brain and therefore, thyrotoxicosis may alter dopamine metabolism in the corpus striatum, eventually inducing chorea[11]. Hyperthyroid chorea is thought to be due to increased sensitivity of striatal dopamine receptors to dopamine associated with reduced cerebral dopamine turnover[6,12]. Homovanillic acid levels in the CSF, which are a direct reflection of dopamine metabolism within the central nervous system, are low in hyperthyroidism and high in hypothyroidism. This postulate is supported by the observation that the chorea of thyrotoxicosis is alleviated by haloperidol, a drug which blocks dopamine receptors.

Most cases of chorea in patients with thyrotoxicosis are bilateral, but the patient we have reported had right sided hemichorea. Although some reports suggest that hemichorea in Sydenhams chorea is caused by some asymmetric focal lesion in the basal ganglia, cerebral cortex or both[13], case reports of 2 patients with left sided hemichorea due to thyrotoxicosis did not demonstrate any abnormalities on computed tomography and magnetic resonance imaging of the brain[9,14]. It is worthy of note that the choreiform movements in both patients disappeared when thyroid function returned to normal.

Patients with the primary antiphospholipid syndrome (APS) have also been reported to present with chorea[15]. Autoimmune thyroid disease is associated with an increased prevalence of antiphospholipid antibodies when compared to healthy individuals, but the presence of these antibodies has been considered as just a nonspecific marker of activation of the immune system[16]. Chorea may also occur in the course of systemic lupus erythematosus (SLE) and the disorder is associated in this setting, with the presence of the antiphospholipid antibodies[17]. The mechanism of SLE related chorea is uncertain, but a direct, non-vascular mediated interaction of antiphospholipid antibodies with brain cells has been proposed. Interestingly, abnormal thyroid function test results are common in patients with SLE, and SLE has

been associated with an increased prevalence of autoimmune thyroid disease[18].

Thus besides the induction of movement disorders by hyperthyroidism, a previously unrecognized pathogenetic role for antiphospholipid antibodies is a possibility in at least some patients with hyperthyroidism related chorea[19]. It has been postulated that young women who present with Graves' disease should be tested for antinuclear anti-dsDNA antibodies and also for antiphospholipid antibodies[19]. Prolonged follow up is recommended for those who test positive for antiphospholipid antibodies in order to determine their true clinical significance in patients with autoimmune thyroid disease.

The progressive and profound generalized muscle weakness observed in the patient we have described may have been as a result of thyrotoxic myopathy. Muscle weakness involving the shoulders, limbs, and particularly the quadriceps muscles is quite common in Graves' disease and occasionally profound[20].

The hypokalaemia documented in this patient raises the possibility of hypokalaemic thyrotoxic periodic paralysis. This disorder occurs rarely and is more commonly seen in Asians although it has been described in other ethnic groups[21]. It is characterized by sporadic attacks of hypokalaemia and muscle weakness lasting for hours to days. The clinical features in our patient were however not in support of hypokalaemic thyrotoxic periodic paralysis. It is important to exclude myasthenia gravis, as it is also associated with Graves' disease[20].

The other prominent presenting symptom in our patient was recurrent severe vomiting and this may have been responsible for the hypokalaemia observed in our patient. Some reports in the medical literature indicate that vomiting may be an uncommon but important and under recognized manifestation of thyrotoxicosis[22-25]. The vomiting may be accompanied by nausea and abdominal pain. In some of these reports, signs and symptoms of thyrotoxicosis were not evident at presentation and led to a delay in the diagnosis of thyrotoxicosis, as was the case in the patient we have reported. Treatment with antithyroid drugs relieves the vomiting.

Thyrotoxicosis can masquerade as a variety of other diseases, and this may delay the diagnosis, as was the case in the patient we have reported.

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