An Unusual Presenting Symptom of Graves’ Disease: Myalgia

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Abstract
A 50-year-old female patient presented with severe myalgia involving her proximal muscles for 3–4 weeks. She also reported mild thyrotoxic symptoms over the same time period. Examination revealed mild thyrotoxicosis, a moderate diffuse goiter and no eye signs. The clinical picture was dominated by muscle pain and tenderness involving mainly her proximal arms and legs, her calves and her fingers, requiring opiate analgesia. Muscle power and tendon reflexes were normal. Laboratory evaluation revealed undetectable serum thyroid stimulating hormone (TSH) with raised FT4, FT3 and positive TSH receptor antibodies. Treatment with carbimazole was started. Additional laboratory investigations were negative (inflammatory markers, creatine kinase and antibodies to antinuclear antibodies, gastric parietal cell, smooth muscle, mitochondrial, dsDNA, centromere, extractable nuclear antigen (ENA) ribonucleoprotein, ENA Sm, ENA Ro, ENA Anti-La, ENA Scl70, ENA Jo-1, anti-CCP and rheumatoid factor). Further assessment in the rheumatology clinic confirmed there was no small joint tenderness or loss of range of movement of her limbs, but widespread and profound muscle tenderness of the common extensors of the forearms, biceps, trapezius, calves and thighs. She was treated symptomatically with analgesic medication and continued...
on carbimazole. A month later she was euthyroid and her myalgia had resolved. Hyperthyroidism has a profound effect on skeletal muscle and often leads to myopathy. Severe myalgia in association with Graves’ disease is rare and resolves with the restoration of euthyroidism.

**Introduction**

Graves’ disease is the commonest cause of thyrotoxicosis [6]. It is an autoimmune disorder in which circulating immunoglobulin G autoantibodies bind to and activate G-protein-coupled thyrotropin receptors, causing increased hormone production. Symptoms and signs of Graves’ disease result either from the effect of hyperthyroidism or autoimmune processes. The latter include orbitopathy, goiter and thyroid dermopathy. Musculoskeletal complaints are common in patients with thyroid dysfunction. Patients suffering from Graves’ disease usually experience weakness in their proximal muscles [1]. Muscle weakness may rarely be due to thyrotoxic periodic paralysis, a potentially fatal complication of thyrotoxicosis [7]. In addition, Graves’ disease has been associated with autoimmune disorders of muscles such as polymyositis and myasthenia gravis [8, 9]. We describe a 50-year-old patient with Graves’ disease, whose dominant presenting symptom was myalgia.

**Case Presentation**

A 50-year-old female patient presented to an endocrinology outpatient clinic for further management. For 3–4 weeks, she had been experiencing severe muscle aches in her arms and thighs and pain in her fingers, shoulders and calves, resulting in sleep disturbance. Over the same period of time she reported an increase in her appetite, a small rise in her weight and excessive thirst. The myalgia tended to be more intense in the mornings and was associated with stiffness lasting up to 2 h. She had experienced no previous episodes similar to this and there was no history suggestive of viral infection. Her past medical history included osteoarthritis of her knee and cervical spine and a right frozen shoulder, for which she had undergone a hydrodilation with significant benefit. She had a previous history of recurrent urinary tract infections, for which cefalexin was prescribed as long-term prophylaxis. The patient was also taking propranolol, trazodone and tramadol. Upon physical examination, she was mildly thyrotoxic with no evidence of hand synovitis or tenosynovitis. Additional laboratory investigations were negative (table 1). The serum alanine transaminase was elevated at 105 U/l but without concurrent elevation of creatine kinase. Within 1 month of commencing treatment with carbimazole, the patient’s myalgia had almost completely resolved. One month later she was clinically and biochemically euthyroid and levothyroxine was added to her treatment.

**Discussion**

Muscular weakness is a common sign in hyperthyroidism. Symptoms are primarily those associated with chronic proximal myopathy [1]. Rarely, bulbar muscles may also be involved [10, 11]. Thyrotoxic myopathy usu-
Myalgia can rarely be the presenting symptom of thyrotoxicosis and may resolve rapidly after the restoration of euthyroidism.

**Disclosure Statement**

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

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**References**