MUSCULAR HYPERTROPHY AS ATYPICAL INITIAL PRESENTATION OF HYPOTHYROIDISM

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Abstract

Hypothyroidism is a common endocrine disease with characteristic symptoms and signs such as fatigue, weight gain, intolerance of cold, constipation, depression, mental slowdown and muscle cramps. Myopathic changes are observed in 30-80% of patients with hypothyroidism, but muscular hypertrophy with muscle stiffness has been reported in less than 10% of patients. Hoffmann's syndrome is a specific form of the hypothyroid-associated myopathy, rarely seen. Symptoms of this syndrome include proximal muscle weakness, hypertrophies in extremities, stiffness, muscle cramps, spontaneous muscle pain; and are associated with increased muscle enzymes. These findings can be seen at any time during hypothyroidism. Hoffmann's syndrome has a very good prognosis. Its response to hormone replacement therapy is very good. Therefore, in patients with myopathy-like symptoms, considering in the differential diagnosis that the myopathy may be a reflection of hypothyroidism will facilitate the diagnosis and treatment.

In this case, we aimed to present together Hashimoto thyroiditis and muscular hypertrophy, which is an atypical presentation of hypothyroidism and rarely seen in the literature, namely Hoffmann's syndrome.

Key words: Hypothyroidism, Myopathy, Muscular hypertrophy, Hoffmann's syndrome.

INTRODUCTION

Hypothyroidism is a common endocrine disease with characteristic symptoms and signs such as fatigue, weight gain, intolerance of cold, constipation, depression, mental slowdown and muscle cramps. Myopathic changes are observed in 30-80% of patients with hypothyroidism, but muscular hypertrophy with muscle stiffness has been reported in less than 10% of patients (1,2). Hypothyroid-associated myopathy is divided into 4 sub-types: Kocher-Debre-Semelaigne syndrome (seen in infants with cretinism), Hoffmann's syndrome, atrophic form and myasthenic syndrome (3).

Hoffmann's syndrome is a specific form of the hypothyroid-associated myopathy, rarely seen and it was first described by Hoffmann in 1897 (4). Symptoms of this syndrome include proximal muscle weakness, hypertrophies in extremities, hardness, muscle cramps, spontaneous muscle pain, and is related to the increased creatine phosphokinase, aldolase, lactate dehydrogenase. However, muscle hypertrophy as a first sign of hypothyroidism is rarely seen (5).

In this case, we aimed to present the association of Hashimoto thyroiditis and muscular hypertrophy, which is an atypical presentation of hypothyroidism and rarely seen in the literature, namely Hoffmann's syndrome.

CASE REPORT

A 24-year-old male patient consulted, with complaints of swelling and pain in both calf muscles. His complaints have begun in the latest 4 months, with painful muscle cramps throughout the night, difficulty in standing from the sitting position and difficulty in lifting his hands up above the shoulder level, disrupting his daily activity. The patient went to different clinics with these complaints and had no benefit from the analgesic treatment given. In addition to musculoskeletal symptoms, he had complaints of weakness, forgetfulness and weight gain (4 kg in last 3 months) for the last 6 months. There was no chronic disease and no regular drug use. In his family, his father had previously been treated for Hashimoto thyroiditis. On physical examination; blood pressure was 90/60 mmHg, body temperature was 36.3 degrees and body mass index was 27.2 kg/m². The bilateral calf muscles were hypertrophic and no tenderness with palpation, or no increased temperature. Four extremities had muscle strength 4/5 and sensory examination was normal. Deep tendon reflexes had

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decreased. Other system examinations were normal.

In laboratory examinations that creatinine phosphokinase was 2180 IU/L (29-200), lactate dehydrogenase was 580 IU/L (0-248), serum total cholesterol was 210 mg/dL (110-200), thyroid stimulating hormone was 28.8 mU/L (0.3-5.6), free T3 was 0.3 pg/dL (2.5-3.9) and free T4 was 0.4 ng/mL (0.6-1.1). Sedimentation rate and C-reactive protein levels were normal. Anti-thyroid peroxidase antibody was positive. Anti-nuclear antibody, anti-CCP, anti-dsDNA, rheumatoid factor, anti-Ro, anti-La, anti-Jo-1, anti-Mi-2 antibodies were negative. Renal functions, liver tests, serum electrolytes, serum calcium and parathormone, 25-OH vitamin D values and other parameters were in normal levels. Electrocardiography was in low-voltage, sinus rhythm and heart rate 60/ min. Echocardiography was normal. Bilateral lower extremity artery and venous doppler ultrasonography (USG) were normal.

In the evaluation of thyroid USG it was observed increasing in gland vascularization with numerous millimeter-sized hypo-anechoic pseudonodular areas in both lobes. These findings were consistent with thyroiditis. Hashimoto thyroiditis was diagnosed because of anti-thyroid peroxidase antibody positivity and impaired thyroid function tests. In the evaluation of bilateral gastrocnemius muscle with electromyography, diagnosis of myopathy was made because of short duration, low amplitude and early participation of motor unit potentials. At the time of admission, our patient whose calf muscles had been hypertrophic was found to comply with Hoffmann's syndrome.

Treatment with 100 ug/day oral levothyroxine was initiated. He was called to the controls at regular intervals. After 6 months of follow-up, it was observed that his calf muscle circumference decreased significantly and creatine phosphokinase normalized. The patient's complaints of muscle pain and muscle weakness got better.

DISCUSSION

Hypothyroidism is a common endocrine disease with characteristic symptoms and signs such as fatigue, weight gain, intolerance of cold, constipation, depression, mental slowdown and muscle cramps. Absence of thyroid hormones results in decreased or slowed metabolic functions by inhibiting protein and carbohydrate cycle. These metabolic changes occur in most organ systems, including muscles. Regardless

of the cause, neuromuscular and musculoskeletal system findings can be observed in the majority of patients with hypothyroidism (6). These findings can be seen at any time during hypothyroidism and usually involve complaints of mild muscle weakness, pain and stiffness (7-9). Hypothyroid myopathy typically reveals as polymyositis-like myopathy with proximal muscle weakness and increased creatine phosphokinase levels (10). However, sometimes, it may also develop in a manner muscle growth (pseudohypertrophy) in adults, which is called Hoffmann's syndrome. Hoffmann's syndrome is a specific form of hypothyroid-associated myopathy, rarely seen. Patients complain of pain on the muscle, swelling and proximal muscle weakness.

In this case, our patient had no previous history of chronic disease. He applied to our clinic with complaining of the both calf muscles swelling, pain and proximal muscle weakness which had started in the last four months. He had not benefited from analgesic treatment. Firstly, it was thought that creatine phosphokinase was elevated due to disorders of the musculoskeletal system and arterial system disease. Considering the causes of proximal muscle weakness and creatine phosphokinase elevation, it was inclined away from the Duchenne muscular dystrophy disease, since the patient's disease started at the age of 24 years. Also polymyositis was infirmed, since antibodies such as anti-Jo-1 and anti-mi-2 were negative. Similarly, the polymyalgia rheumatica and inclusion body myositis disease were rejected since sedimentation rate and C-reactive protein values were negative and he was under 50 years old. Some medical agents, such as alcohol, corticosteroids, clofibrate, zidovudine, HMG-CoA reductase inhibitors, can also cause proximal muscle weakness (11). However, our patient had no history of alcohol or any drug use. In addition, the diagnosis of infectious causes and deep venous thrombosis were rejected. Hashimoto thyroiditis was diagnosed because of anti-thyroid peroxidase antibody positivity, suggestive thyroid USG and impaired thyroid function tests. In the evaluation of bilateral gastrocnemius muscle with electromyography, diagnosis of myopathy was made because of short duration, low amplitude and early participation of motor unit potentials. At the time of admission, our patient whose calf muscles had been hypertrophic was diagnosed as Hoffmann's syndrome.

Hoffmann's syndrome has a very good prognosis. In some cases, symptoms and muscle enzyme levels have been shown to improve within

3 months after levothyroxine therapy (1,12). In our patient, at the medical examination in the 6th month after oral levothyroxine treatment, it was observed that his calf muscle circumference decreased significantly, creatine phosphokinase decreased to normal levels, and his complaints of muscle pain and muscle weakness got better.

In conclusion, Hoffmann's syndrome is a rare condition and may be the initial sign of hypothyroidism. Its response to hormone replacement therapy is very good. The rare occurrence of the disease prolongs the process of diagnosis and treatment of patients. Therefore, in patients with myopathy-like symptoms, it should be considered in the differential diagnosis that the myopathy may be as a reflection of hypothyroidism.

Conflict of interest

The authors declare that they have no conflict of interest.

Abbreviations List

Anti-dsDNA: Anti-double stranded DNA

Anti-CCP: Anti- Cyclic Citrullinated Peptide

HMG-CoA: 3-hydroxy-3-methylglutarylcoenzyme A.

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