—Case Reports—

Hashimoto's Thyroiditis with Clinical Manifestations Resembling Dermatomyositis: A Case Report

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Abstract

We report on a 59-year-old man with a 1-year history of forearm erythema, bilateral limb arthralgia, and muscle weakness. During the initial examination we observed infiltrative erythema of the forearm and muscle weakness and atrophy of the limbs. Blood tests revealed marked increases in myogenic enzymes. Because histopathological studies showed lymphocytic infiltration around the small blood vessels in the dermis and mucin deposition, we made a tentative diagnosis of dermatomyositis. However, the specific cutaneous manifestations of dermatomyositis, including heliotrope erythema and Gottron's sign, were absent, and the findings of electromyography were normal. A subsequent detailed examination revealed hypothyroidism and high titers of antithyroglobulin and antimicrosome antibodies, and we made a definitive diagnosis of Hashimoto's thyroiditis. The thyroid function and skin manifestations both improved after treatment with levothyroxine sodium. Dermatomyositis and Hashimoto's thyroiditis can exhibit similar characteristics, and caution is required because of the possibility of misdiagnosis.

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Key words: Hashimoto's thyroiditis, dermatomyositis, dermal mucinosis, muscle weakness, myogenic enzyme

Introduction

We report a case of hypothyroidism due to Hashimoto's thyroiditis in a 59-year-old man who presented with an erythematous skin eruption and muscle symptoms that mimicked dermatomyositis.

Hypothyroidism may cause mucin deposition in the skin and is accompanied by muscle symptoms (weakness and pain) and elevated levels of myogenic enzyme[1–4]. Such manifestations can cause dermatologists to misdiagnose hypothyroidism as dermatomyositis. It is recommended that a detailed examination of the skin, electromyography, and muscle biopsy should be performed when evaluating patients with both cutaneous symptoms and muscle symptoms. Furthermore, thyroid function tests should be performed to assess the possibility of hypothyroidism, especially Hashimoto's thyroiditis, when findings are inconsistent with a diagnosis of dermatomyositis.

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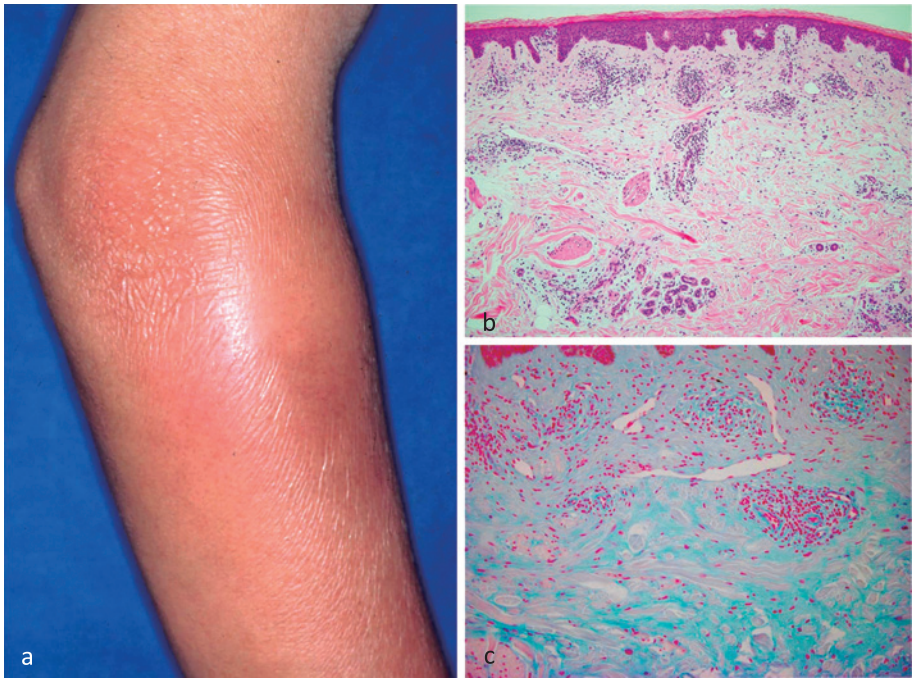

Fig. 1 Skin symptoms and histopathological findings at the time of the initial examination. **a**. Shiny, reddish-brown, clearly demarcated infiltrative erythema was seen on the lateral aspect of the right forearm. **b**. Lymphocytic infiltration was seen around the small blood vessels in the upper dermis and in part of the epithelium. Edema and dilatation of numerous small lymph vessels were observed throughout the dermis. **c**. Deposits of a pale-blue-stained mucin-like substance were observed between the collagen fibers in the upper to lower layers of the dermis (Alcian blue stain).

Case Report

A 59-year-old man presented with a 1-year history of forearm erythema, bilateral limb arthralgia, and muscle weakness. During the initial examination we noted mild pruritus of both forearms and well-demarcated erythema that was infiltrative to the touch and accompanied by tenderness and hyperthermia **(Fig. 1a)**. The muscles of both upper arms and thighs had atrophied, and the manual muscle test confirmed muscle weakness. Except for a C-reactive protein level of 0.41 mg/dL and an erythrocyte sedimentation rate of 45 mm/hr, the results of blood examination and urinalysis, including the peripheral blood count and markers of liver function and kidney function, were within their normal ranges. Tests for autoantibodies, including anti-Jo-1 antibodies, also yielded normal results, and the carcinoembryonic antigen concentration was 1.1 ng/mL. However, because levels of myogenic enzymes, including creatinine kinase (1,158 IU/L) and aldolase (11.7), were significantly elevated, we considered dermatomyositis to be the most likely diagnosis.

Histopathological examination of the erythematous areas of forearm revealed perivascular infiltration by lymphocytes in the upper layer of the dermis and deposition of a pale basophilic substance between the collagen fibers from the upper to lower layers of the dermis, and Alcian blue staining demonstrated a pale-blue-stained mucin-like substance **(Fig. 1b and c)**. The direct fluorescent antibody technique revealed the presence of granular deposits of immunoglobulin M along the dermal-epidermal junction. None of these histopathological findings were inconsistent with the diagnosis of dermatomyositis. However, because electromyography of the atrophied muscles of both upper arms yielded no abnormal findings, we considered the possibility of another condition and focused on thyroid disease. Tests showed a free T3

level of <0.7 pg/mL, a free T4 level of 0.2 ng/dL, an antithyroglobulin antibody titer of 102,400, and an antimicrosomal antibody titer of 256,000. Palpation of the neck revealed a mild goiter. Because of the symptom of heavy snoring, the patient was examined in the department of otorhinolaryngology, where mucosal thickening was detected in the oropharyngeal area. On the basis of these manifestations, we ruled out the diagnosis of dermatomyositis that we had originally considered and instead made a definitive diagnosis of myxedema accompanying the hypothyroidism of Hashimoto's thyroiditis.

Six months later the hypothyroidism had improved in response to treatment with levothyroxine sodium (200 μg/day), and the skin eruption, goiter, muscle weakness, and snoring had also become milder.

Discussion

As a result of the impaired thyroid hormone synthesis and secretion in hypothyroidism, thyroid hormone concentrations in the blood decrease, and a variety of symptoms develop, including a loss of energy; cold intolerance; hoarseness; cold, coarse, dry skin; and dry, brittle hair[5,6]. Also, mucin deposition is thought to occur because mucin degradation is inhibited as a result of the suppression of carbohydrate metabolism that accompanies hypothyroidism[7,8].

Hashimoto's disease, also called chronic lymphocytic thyroiditis or autoimmune thyroiditis, is the most common cause of hypothyroidism in Japan, Europe, and the United States. It is sometimes accompanied by skin manifestations due to dermal mucinosis[7,8], by increased myogenic enzyme levels, and by muscle weakness that resemble those of dermatomyositis. If such manifestations are present, Hashimoto's disease can misdiagnosed as polymyositis/dermatomyositis[1–4]. Moreover, Hashimoto's thyroiditis itself can be complicated by Sjögren's syndrome[9,10], rheumatoid arthritis[11], systemic lupus erythematosus[12], and dermatomyositis[13–15]. Thus, whenever skin symptoms are accompanied by muscle weakness and elevated levels of myogenic enzymes, Hashimoto's thyroiditis, in addition to dermatomyositis, should be considered.

In the present case we initially made a diagnosis of dermatomyositis based on the clinical manifestations and histopathological findings of the skin. However, we ultimately made a definitive diagnosis of Hashimoto's thyroiditis because we observed neither the pathognomonic eruptions of dermatomyositis (such as heliotrope erythema and Gottron's sign) nor myogenic abnormalities on electromyograms but did observe goiter, hypothyroidism, and thyroid autoantibodies. Furthermore, the symptoms improved in response to thyroid hormone supplementation.

When a dermatologist sees an erythematous skin eruption associated with myogenic enzyme elevation and muscle weakness, there is a tendency to make a diagnosis of dermatomyositis. However, a diagnosis should be made with the possibility of hypothyroidism, especially of Hashimoto's thyroiditis, in mind.

Conflict of Interest: The authors declare no conflict of interest.

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