

# Generalized morphea and hypothyroidism: Case report of a rare association

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## Abstract

Morphea is a localized form of scleroderma in which there is predominant skin involvement, with occasional involvement of subjacent muscles and usually spares the internal organs. Thyroid dysfunction has been reported in systemic sclerosis but it has been rarely reported in morphea. There are few case reports of plaque-type morphea associated with autoimmune thyroiditis but generalized morphea with hypothyroidism has been rarely reported. We report a 55-year-old female with generalized morphea involving trunk and proximal limbs who revealed hypothyroidism on laboratory screening. Due to the rarity of this association we were obliged to report the same.

## Key words

Generalized morphea, hypothyroidism, scleroderma.

## Introduction

Scleroderma is a spectrum of disorders characterized by thickening and/ or hardening of the skin and fibrosis of the involved tissues. It is divided into systemic and localized forms. The localized form is called morphea. It is characterized by predominant skin involvement, with occasional involvement of subjacent muscles and usually spares the internal organs.<sup>1</sup> Based on the morphologic findings, morphea has been classified into five types by Paterson *et al.*<sup>2</sup> plaque, linear, generalized, deep and bullous. Generalized morphea is a rare condition and occurs in the cases of disseminated sclerosis without systemic involvement.<sup>3</sup> It occurs mainly in adults and is diagnosed when four or more plaques become larger than 3cm and merge,

involving two of the seven main anatomical areas (head and neck, left or right upper limb or lower limb, anterior or posterior trunk).<sup>4</sup> Thyroid dysfunction is commonly reported in systemic sclerosis but it has been rarely associated with morphea.<sup>5,6</sup> Moreover there are only few cases of plaque-type morphea reported to be associated with autoimmune thyroiditis. There has been no case of generalized morphea associated with hypothyroidism reported to the best of our knowledge.

## Case report

A 55-year-old female from Kashmir reported to us in the outpatient department with a chief complaint of diffuse thickening and hardening of the skin over abdomen, chest, neck, back, proximal half of thighs with relative sparing of skin over breasts for the last one month. There was history of pruritus. Patient gave history of xerosis of the skin involving trunk for the last one and a half months. There was no history of any sequential colour changes in the digits on

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**Figure 1** Generalized morphea associated with hypothyroidism. Diffuse induration and slightly brownish hyperpigmented skin present over abdomen.

exposure to the cold. There was no history of sour eructations, epigastric burning sensation and constipation. There were no such skin complaints of hardening on hands and feet. Patient didn't give any history of preceding trauma or application of some topical medications prior to the complaints. Patient denied any such complaints in her family members. On examination, there was diffuse induration of the skin over abdomen, chest, neck, back, proximal half of thighs with relative sparing of skin over the breasts (**Figure 1**). The skin looked shiny and slightly hyperpigmented. There was no digital pallor or cyanosis. Mouth opening was normal. Nail fold capillaroscopy did not reveal any abnormality. Chest expansion was within the normal range. Skin biopsy on histopathological examination showed epidermal atrophy, a dermal and subcutaneous perivascular lymphocytic and plasma cell infiltrate and thickened and closely packed dense bundles of collagen with sparse adnexal structures which confirmed the diagnosis of morphea. Complete blood count (CBC) did not reveal any eosinophilia. Her anti-nuclear antibody was negative. Both anti-Scl 70 and anti-centromere antibodies were negative. Her thyroid-stimulating hormone (TSH) was elevated (TSH=29.57 mIU/ml; normal=0.30-5) but the

concentrations of total thyroxine (T4) and total triiodothyronine (T3) were within normal limits (T3=108 ng/dl; normal = 60-200; T4=7.50µg/dl; normal= 4.5-12). Antithyroglobulin antibody titer was elevated (1:500; normal <1:100). Ultrasonography (USG) of the neck didn't reveal any thyroid abnormality. With these investigations, a diagnosis of generalized morphea with hypothyroidism secondary to autoimmune thyroiditis was made. She was treated with oral sodium levothyroxine 25µg/day. For dermatological complaints, she was prescribed topical tacrolimus 0.1% ointment and emollients. After two months, her skin induration and xerosis improved.

## Discussion

Generalized morphea is a rare condition characterized by idiopathic sclerosis of the skin in a widespread distribution usually starting on the trunk and is not associated with systemic disturbances. The plaques of generalized morphea are larger (many centimeters in diameter) as compared to localized plaque-type morphea. Plaques start on the trunk and increase in size gradually. The commonly involved areas include the upper trunk, abdomen, breasts and upper thighs.<sup>7</sup> The etiology of the disease is unknown. However, excessive production of collagen by fibroblasts in affected tissues is seen in all forms of morphea. The mechanism by which these fibroblasts are activated leading to overproduction of collagen is not clear. Serum autoantibodies are usually demonstrated in the patients of morphea. Antinuclear antibodies are present in half of the morphea patients. Anti-Scl70 and anti-centromere antibodies have been seen in less than 5% of the patients of morphea.<sup>8</sup> However, in our case ANA, anti-Scl70 and anti-centromere antibodies were negative.

Various studies have demonstrated that morphea is an immune-mediated disease. This is

supported by increased levels of circulating cytokines in the patients of morphea which include interleukin-2 (IL-2) receptor, IL-6 receptor, IL-13 and toxic necrosis factor (TNF) etc. Various organ-specific autoantibodies have been demonstrated in the serum of these patients and their relatives. Morphea has been associated with carpal tunnel syndrome, nephritis, vitiligo, dermatomyositis, pemphigus, primary biliary cirrhosis and myasthenia gravis.<sup>7</sup> However, the reports of morphea with hypothyroidism have been rarely reported.

Thyroid dysfunction with anti-thyroid autoantibodies and systemic sclerosis has been frequently associated. Such association is usually seen in patients with personal or a familial history of thyroid disease.<sup>5,6</sup> However, the simultaneous occurrence of morphea and autoimmune thyroiditis has rarely been described.<sup>9,10</sup> Thyroid hormones act at the nuclear receptors of human fibroblasts and modulate the synthesis and degradation of collagen. Lee *et al.*<sup>11</sup> have described two cases of plaque type morphea associated with Hashimoto's thyroiditis from Korea. However, generalized morphea associated with hypothyroidism has not been reported to the best of our knowledge which makes our case a unique one. Systemic sclerosis forms an important differential diagnosis of generalized morphea. Morphea can be easily differentiated from systemic sclerosis by the absence of Raynaud's phenomenon, sclerodactyly, nailfold capillary changes and other organ system involvement.<sup>4,12</sup> All these features were absent in our case.

The prognosis of morphea is usually good. It rarely evolves into systemic sclerosis. Isolated plaque type, generalized and guttate types have usually a self-limiting course. The course of the disease activity usually lasts for three to four months.<sup>13,14</sup>

The treatment modalities for morphea include phototherapy, topical tacrolimus, calcipotriol in combination with betamethasone dipropionate, Imiquimod, methotrexate in combination with systemic steroids, cyclosporine, D-penicillamine, mycophenolate mofetil, photophoresis, etc.<sup>15</sup> Our case was managed with topical tacrolimus 0.1% ointment and emollients and with oral sodium levothyroxine 25 µg/day. After two months of treatment, the induration and the xerosis improved.

### Conclusion

Thyroid dysfunction can occur in morphea. Thyroid function tests should be done in cases of morphea to rule out any concomitant thyroid dysfunction.

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