

# Pre tibial myxedema associated with hypothyroid Hashimoto's thyroiditis

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## Abstract

Pretibial myxedema (PTM) is an infiltrative dermatopathy due to accumulation of glycosaminoglycans in the dermis and sub cutis. It is commonly associated with Grave's disease. However, it is infrequently associated with Hashimoto's thyroiditis and primary hypothyroidism. It often presents as an asymptomatic diffuse non pitting edema, nodule or plaque involving both pretibial areas. Pretibial myxedema may undergo partial or complete remission and is primarily a cosmetic concern for the patient. Apart from treatment of the primary thyroid abnormality, topical or intralesional steroids remain the mainstay of treatment. We report a case of a 72-year-old lady who presented with non pitting edema on both legs. Her thyroid function tests were suggestive of hypothyroidism and thyroid auto antibody profile, ultrasonography and fine needle aspiration cytology favored Hashimoto's thyroiditis. Histopathology of the pretibial skin was in consistent with pretibial myxedema. A paradox of pretibial myxedema in a patient with Hashimoto's thyroiditis is a rare clinical entity.

## Introduction

Pretibial myxedema is a relatively uncommon skin complication of auto immune thyroid disease, although the exact pathogenesis is not clear. A leading theory proposes that fibroblasts are stimulated to produce abnormally high amounts of glycosaminoglycan under the influence of thyrotropin receptor antibody (TRAB) and antigen-specific T cells. TRAB-binding sites are found in the plasma membranes of fibroblasts derived from the skin of patients with PTM. TRAB is present in the serum of most patients with PTM (80-100%)<sup>1,2</sup>. A mechanical process, is also suggested. PTM frequently develops in areas of trauma, and in dependent sites. Dependent swelling could result in pooling of immune cells and proteins, increasing the disease effects<sup>1,2</sup>. Early lesions are bilateral, firm, non pitting, asymmetrical plaques or nodules. Hair follicles are sometimes prominent, giving a peau d'orange texture. In the elephantiasis form of PTM, lesions may coalesce to give the entire extremity an enlarged, verruciform appearance. Overlying hyperhidrosis or hypertrichosis may be present in these cases. Lesions characteristically appear on the lateral or anterior aspect of the legs, but they may occur on the thighs, the shoulders, the hands, the forehead, or any other skin surface<sup>3,4</sup>. Intra regional or topical therapy with corticosteroids is

currently the only treatment that offers demonstrated efficacy<sup>5</sup>. The condition may resolve spontaneously, in parallel with a disappearance of the circulating antibody.

## Case report

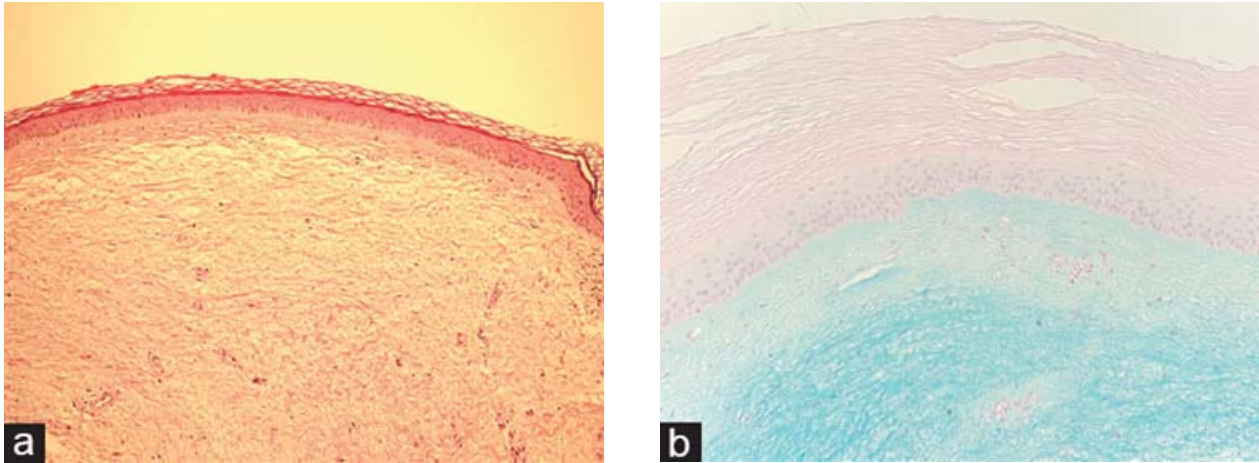
A 72-year-old lady presented to the medical ward with bilateral lower limb swelling for three weeks duration. She had fatigue, lethargy and constipation. She did not have hoarseness of voice, cough, and loss of weight or urinary symptoms. Her past medical history was unremarkable. There was no family history of thyroid disorder.

Examination showed pallor, non pitting edema with peau d'orange appearance in both anterolateral legs and feet. She had a goiter. There was no icterus, exophthalmos, clubbing or evidence of thyroid acropathy. Her heart rate was 68 beats per minute and regular. Blood pressure was 120/80 mmHg. Systemic examination findings were unremarkable (Figure 1).



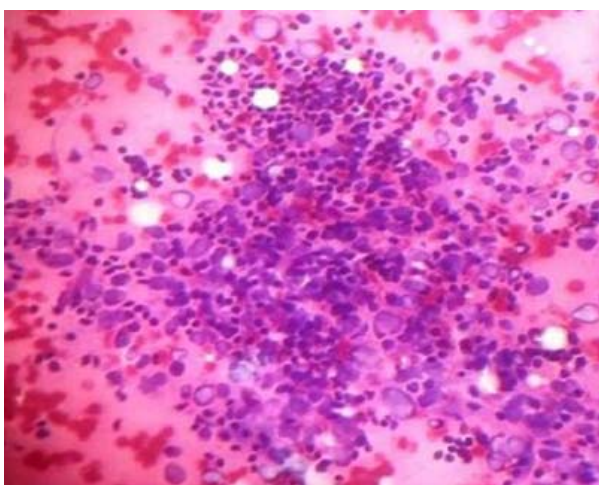
**Figure 1.** Non pitting edema with peau d'orange appearance.

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**Figure 2.** (a) Histopathological examination shows normal epidermis, with collagen fibers in reticular dermis mildly separated by deposits of mucin and mild perivascular lymphocyte infiltrate (H and E,  $\times 40$ ). (b) Alcian blue stain reveals mucin deposition in the dermis.

Investigation revealed normochromic, normocytic anemia. Her TSH was elevated, and total T4 was low. Thyroid receptor Ab level was marginally elevated. Her thyroid peroxidase was significantly elevated and thyroglobulin Ab was normal. Her lipid profile, renal and liver biochemistry were normal. Ultrasonography showed diffusely enlarged thyroid within homogenous hypo echogenicity. Colour Doppler showed increased vascularity. Skin biopsy showed separation of collagen fibers in the mucinous background. Alcian blue stain was positive for mucin (Figure 2). Fine needle aspiration cytology (FNAC) revealed lymphocytes and plasma cells infiltrating the thyroid follicle (Figure 3). She was started on levothyroxine 25 $\mu$ g initially and then stepped up to 75 $\mu$ g.



**Figure 3.** FNAC showing lymphocytes and plasma cells infiltrate, H&E  $\times 400$

Her PTM was treated with 0.05% clobetasol propionate under occlusion.

### Discussion

PTM associated with hypothyroid Hashimoto's thyroiditis is a very rare clinical entity. PTM occurs due to deposition of glycosaminoglycan in the dermis and sub cutis. However, the exact pathogenesis is not clear. It is believed that TSH receptor Abs stimulate fibroblast to produce glycosaminoglycans<sup>2</sup>.

Our patient had very high titers of TPO antibody, elevated thyroid receptor antibody and normal level of thyroglobulin antibody. There were FNAC and USS evidence of thyroiditis<sup>6</sup>.

She had high TSH and low T4 levels which showed hypothyroidism in the setting of Hashimoto's thyroiditis. Some patients with Hashimoto's thyroiditis can have thyroid receptor antibodies<sup>7</sup>.

It may be possible that our patients' thyroid receptor antibody may have stimulated fibroblast to produce glycosaminoglycan, which in turn causes PTM.

We treated our patient with potent topical steroid under occlusion. She showed marked response following one month's topical therapy alone. Other treatment modalities including oral pentoxifylline, intralesional triamcinolone acetonide, octreotide, a somatostatin analog, and high dose intravenous immunoglobulin (IVIG) are used in the literature<sup>8,9,10,11,12</sup>.

**References**

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