Case Report

Dermopathy of Graves' disease: Clinico-pathological correlation

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ABSTRACT

Dermopathy of Graves' disease is a classical, but uncommon extrathyroidal manifestation of Graves' disease. The images of a typical case of dermopathy of Graves' disease are presented along with clinico-pathological correlation.

Key words: Clinico-pathological correlation, dermopathy of Graves' disease, Graves' disease

Introduction

Dermopathy of Graves' disease is a classical, but uncommon extrathyroidal manifestation of Graves' disease. The images of a typical case of dermopathy of Graves' disease are presented along with clinico-pathological correlation.

Case Report

A 45-year-old male patient, chronic heavy smoker was diagnosed to have thyrotoxicosis due to Graves' disease of four years duration and was on therapy with carbimazole. He developed clinically mild inactive Graves' ophthalmopathy of three years duration in the form of grittiness, watering, protrusion of eyes with periorbital edema without diplopia or diminution of vision. He also developed non-pruritic hyperpigmented plaque like lesions over both shins of two years duration.

On examination, he was thyrotoxic and had a diffuse symmetric firm non-tender goiter [Figure 1a]. He had mild clinically inactive ophthalmopathy in the form of mild exophthalmos (exophthalmometry reading 21 mm bilaterally) and periorbital edema [Figure 1b] and clubbing of the digits consistent with acropachy [Figure 1c]. He had raised hyperpigmented, hyperkeratotic and waxy plaque like lesions over both pretibial regions [Figure 2a and b].

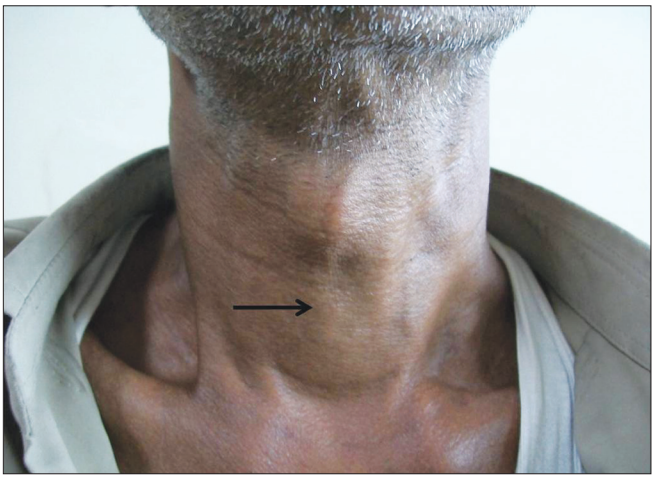

Figure 1a: Neck showing mild diffuse symmetric goiter (arrow)

On laboratory evaluation, thyroid function tests revealed thyrotoxicosis (suppressed TSH <0.1 mIU/L (normal range 0.3 – 5), elevated total T4 19.7 μg/dL (4.6 – 12.4) and total T3 353 ng/dL (87 - 187) with thyroid scan showing diffuse homogeneous symmetric increased uptake in both lobes of the thyroid uptake consistent with Graves' disease. TSH receptor antibody titer by 2nd generation ELISA (Medizym T.R.A., Medipan GmbH, Dahlewitz/ Berlin, Germany) was elevated (>40 IU/L; normal range 0 - 1.5 IU/L).

Skin biopsy from the pretibial skin was performed to confirm the diagnosis. Hematoxylin and eosin stain

Access this article online	
Quick Response Code:	Website: www.ijem.in
	DOI: 10.4103/2230-8210.95714

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of the skin biopsy specimen showed widely separated collagen fibers in the dermis with a normal appearing epidermis [Figure 3a]. Alcian blue stain showed diffuse blue staining in the dermis consistent with abundant mucin/ glycosaminoglycan deposition separating the collagen bundles [Figure 3b].

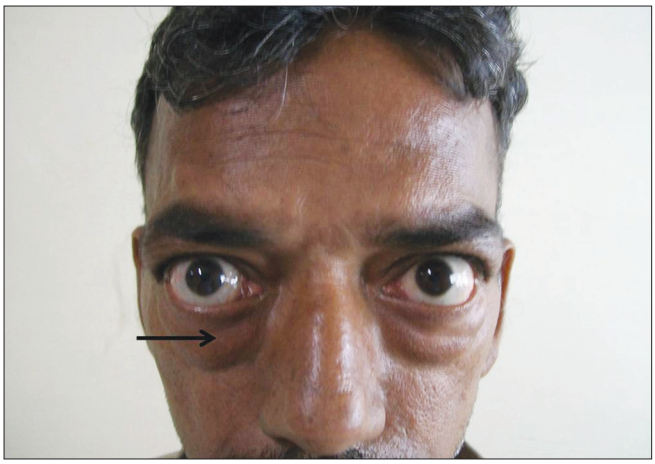

Figure 1b: Face showing features of Graves' ophthalmopathy in the form of exophthalmos, lower lid edema (arrow) and upper and lower eyelid retraction

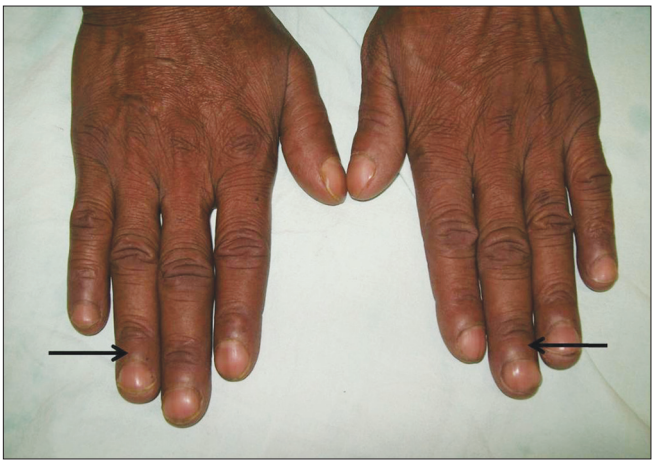

Figure 1c: Hands showing digital clubbing (arrows) consistent with acropachy

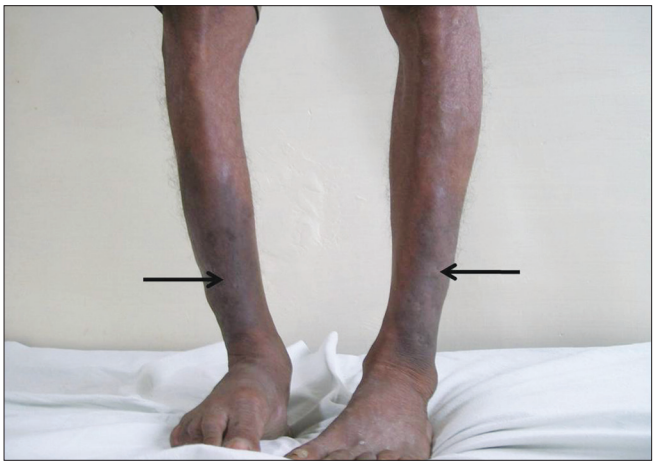

Figure 2a: Dermopathy of Graves' disease with typical raised hyperpigmented waxy plaque lesions (arrows) over the pretibial regions

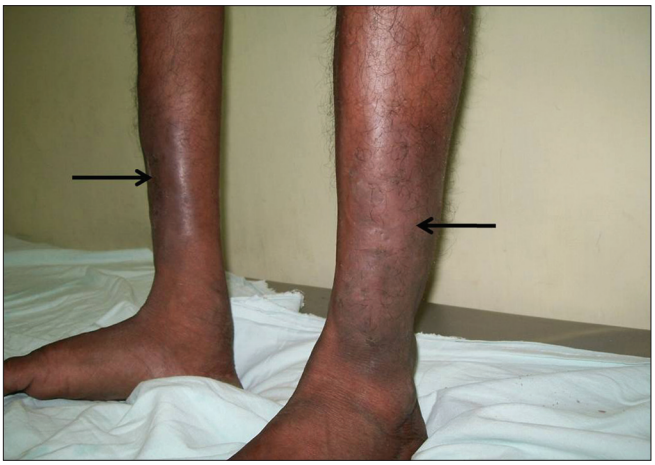

Figure 2b: Dermopathy of Graves' disease with typical raised hyperpigmented waxy plaque lesions (arrows) over the pretibial regions (closer view)

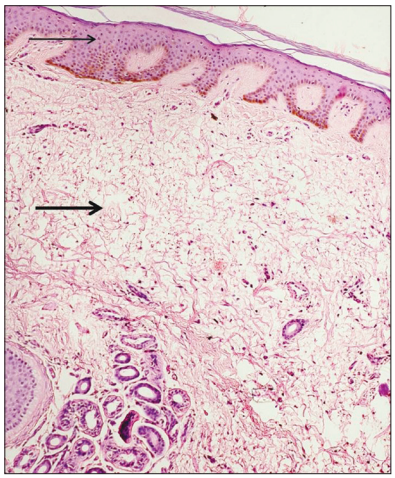

Figure 3a: Photomicrograph of skin biopsy specimen (H and E, ×40) from pretibial region showing widely separated collagen fibers (thick arrow) in the dermis with normal appearing epidermis (thin arrow)

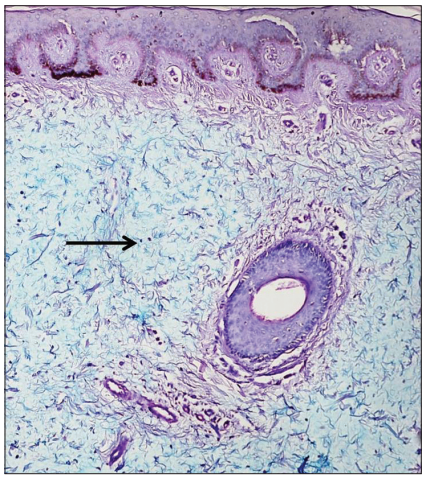

Figure 3b: Photomicrograph of skin biopsy specimen (alcian blue stain, ×100) showing bluish stain of abundant mucin/ glycosaminoglycan (arrow) in the dermis separating the collagen fibers

The patient was advised smoking cessation, lubricant eye drops and eye protection for his eyes. He was continued on carbimazole and propranolol. He was advised definitive therapy for Graves' disease with surgery or radioiodine ablation. The lesions of dermopathy were not treated as they were asymptomatic.

Discussion

Dermopathy of Graves' disease (pretibial myxedema) is an uncommon autoimmune extrathyroidal manifestation of Graves' disease, seen in 0.5–4.3% of cases as per literature from white Caucasians.[1] Dermopathy is almost always associated with Graves' ophthalmopathy and occurs mainly in patients with high TSH receptor antibody titers.[2] Up to 15% of patients with severe Graves' ophthalmopathy have Graves' dermopathy.[1] It is reported less commonly from India, only in the form of a few case reports, mainly in literature from dermatology journals.[3-7] Possible explanations (not conclusively proven) for rarity of reports on dermopathy of Graves' disease from India include lesser genetic predisposition, lesser prevalence and severity of ophthalmopathy and lesser prevalence of smoking. The pathogenesis is due to expression of TSH- receptor antigen in the skin fibroblasts, triggering the auto-immune response.[2] Dermopathy of Graves' disease is usually a late manifestation, occurring later than thyrotoxicosis and ophthalmopathy.[1,2,8] Dermopathy of Graves' disease is associated with acral acropachy in 20% of cases.[1] Acropachy is the least common of the extra-thyroidal manifestations of Graves' disease and always occurs in patients with co-existent ophthalmopathy and dermopathy.[1,9] Acral acropachy presents with digital clubbing, swelling of digits and toes, and periosteal reaction of extremity bones.[9]

Dermopathy of Graves' disease is usually asymptomatic and is mainly of cosmetic concern.[2] The typical site for dermopathy is the pretibial regions (in up to 99% of cases) and the predilection for this site is due to mechanical factors and dependent position.[1,2] Unusual locations for dermopathy include dorsum of feet, shoulders, upper back, upper extremities (dorsum of hands) and pinnae, often preceded by history of trauma.[1] The lesions can be of nonpitting edema, plaque, nodular or elephantiasic form.[1] Histopathology of the skin shows normal epidermis. The dermis shows abundant mucin/ glycosaminoglycan deposition separating and splaying the dermal collagen fibers.[1] There is perivascular lymphocytic infiltration in many cases.

As most of these lesions are asymptomatic, no specific therapy is required.[2] For symptomatic cases, topical corticosteroid therapy under occlusive or compressive dressings is recommended.[2] Upto 50% of lesions go into complete or partial remission over time.[1,2]

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Cite this article as: Reddy SB, Gupta SK, Jain M. Dermopathy of Graves' disease: Clinico-pathological correlation. Indian J Endocr Metab 2012;16: 460-2.
Source of Support: Nil, **Conflict of Interest:** None declared.