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Case Report

Necrobiosis Lipoidica: A Potential Skin Manifestation of Cushing's Disease?

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Case Report

The integumentary system often reflects the presence of systemic diseases. In endocrine disorders, hormonal disturbances can lead to skin manifestations that can aid in early diagnosis and prompt management [1]. Necrobiosis Lipoidica (NL) is a skin rash that typically starts as indurated plaques with yellowish centres and violaceous periphery and then tends to become atrophic with central telangiectasia [1]. Up to two thirds of NL cases have been reported in patients with Diabetes Mellitus (DM) or those who will develop DM in the future [2]. Although NL can occur independent of DM, there are no cases reported in association with Cushing's disease (Figure 1A and B).

We present a case of a 42-year-old previously healthy woman who was found to have a functional pituitary adenoma upon work up of premature ovarian failure. The patient had an elevated ACTH, 24-hour urinary cortisol, a serum cortisol which failed to suppress after dexamethasone, and a 1 cm left pituitary adenoma on imaging, resulting in the diagnosis of Cushing's disease. Two years after tumour resection the patient was diagnosed with recurrence on the same side requiring a second surgical resection. Prior to the surgery, she presented with a painless indurated ulcerating plaque expanding over the right shin, treated as a fungal infection without response. She was on hormonal replacement therapy (prednisone 7.5 mg) after the resection but was off gluco corticosteroids upon developing the skin lesion. She denied the use of other medications, preceding trauma or previous similar skin lesions. The patient was started on topical clobetasol twice daily until referral to dermatology. Upon examination, the patient was found to have over the right shin, a 10 cm dusky to violaceous plaque with a yellowish centre and telangiectasia (Figure 2).

The lesion had surrounding papules and a dusky nodule over the left calf. Biopsy of the right lesion revealed diffuse dermal granulomatous dermatitis suggestive of necrobiosis lipoidica (Figure 3A and B). The lesions continued to improve on oral corticosteroid replacement therapy after the second transsphenoidal resection of the pituitary tumour.

Discussion

Cushing's disease is associated with skin manifestations that include easy bruising, delayed wound healing, skin atrophy, hyperpigmentation (high ACTH levels), acanthosis nigricans, thick violaceous striae and steroid acne. These skin changes are suggested to occur due to the effect of high levels of glucocorticoids on keratinocyte and fibroblast proliferation [1]. On the other hand, the pathogenesis of NL is not established yet [3]. Multiple etiologies have been suggested including microangiopathy and abnormal glucose transport in fibroblasts, particularly due to its association with DM. Several other theories have been proposed such as immunoglobulin deposition in surrounding vessels and disturbed collagen crosslinking and deposition. In addition, possible inflammatory and metabolic changes have been thought to hinder neutrophil migration, resulting in granuloma formation [4].

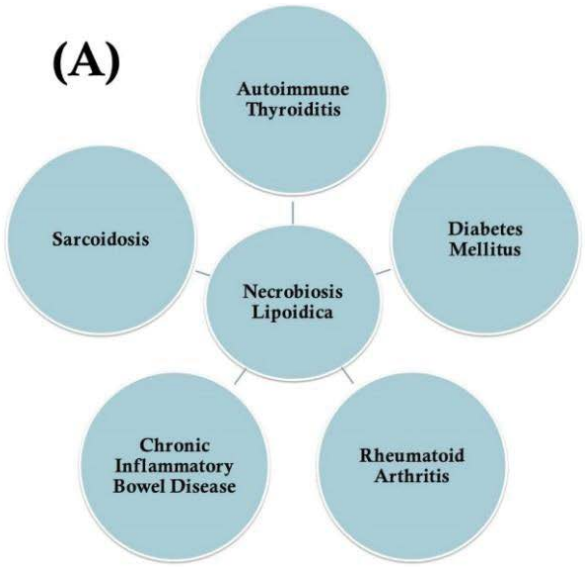

Figure 1A: Summary of the Diseases associated with Necrobiosis Lipoidica.

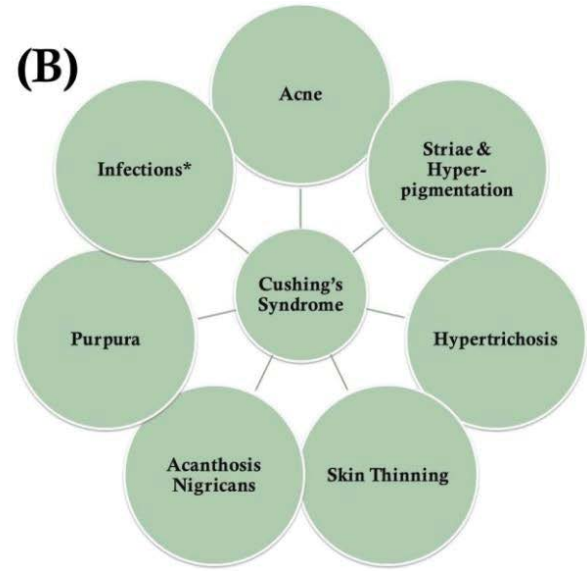

Figure 1B: Summary of the skin manifestations of Cushing's syndrome. * Infections: Mucosal or cutaneous candidiasis, Dermatophyte infection, Staphylococcal pyoderma (Carbuncle, furuncle), Mycotic infections**.**

In line with these theories, we suggest the possible implication of the glucose intolerant state seen in patients with elevated levels of cortisol in the etiology of NL. Hyperglycaemia in patients suffering with Cushing's disease is a common feature that can even result in overt DM [5]. Nonetheless, our patient had normal fasting blood glucose and glycosylated haemoglobin levels on multiple occasions. This sheds light to a variety of factors that remain to be uncovered in the etiology of LN and its link to endocrine disorders.

In this case report, we describe an atypical presentation of NL that seems to be linked to Cushing's disease. Despite the limited understanding of the etiology of NL, this case

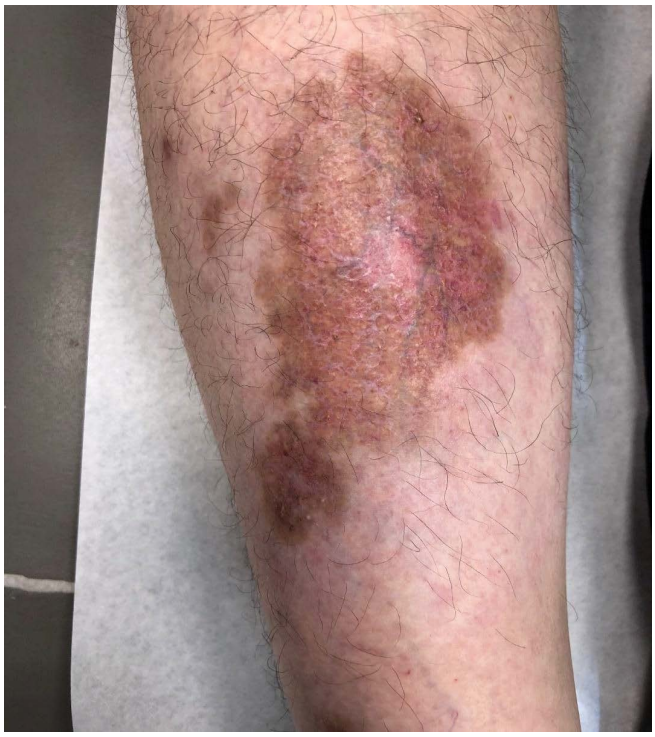

Figure 2: Clinical picture of the right shin after few weeks of topical corticosteroid therapy. 10 x 4 cm pink to yellow plaques with a brown rim and central telangiectasia.

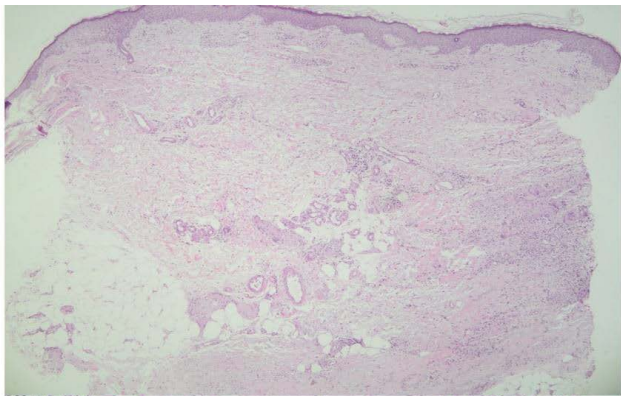

Figure 3A: Multiple granulomas within the entire dermis with focal tiers of granulomatous inflammation (H&E; x40).

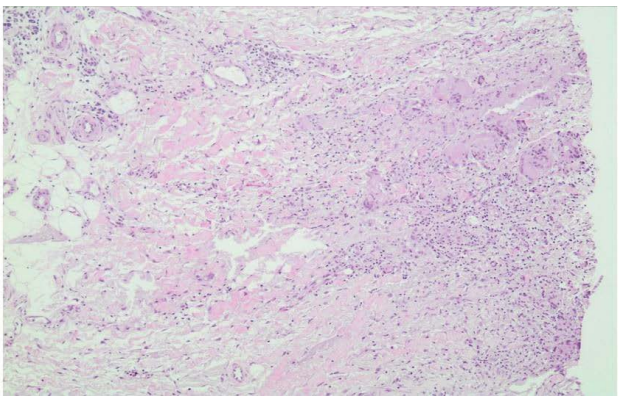

Figure 3B: epithelioid histiocytes forming a palisaded granuloma (H&E; x100).

must alert physicians to screen early for systemic diseases when patients present with certain suggestive skin changes. Especially since the skin provides visual and accessible cues that can reflect serious internal diseases [6].

Disclosure statement

None of the authors have any conflict of interest to disclose. There is no funding source.

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