

Does pernio cause nail dystrophy?

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Abstract

Pernio is an abnormal inflammatory response to moisture and cold. It is characterized with inflammatory, erythema or violet, painful or itchy cutaneous lesions affecting distal extremities, particularly the fingers and toes. It is more common in women. A literature search showed no reports of nail deformities due to pernio. Here, we present a pernio case who developed nail deformities after extended exposure to cold, if combined with other facilitating factors.

Keywords: Perniosis, Nail dystrophy, Inflammation, Extremely cold.

Introduction

First described by Henry Piffard in 1881, pernio (chilblains) is an abnormal inflammatory response to moisture and cold.¹ Pernio develops in susceptible individuals who are exposed to nonfreezing cold. Although more common among young women, it is also seen in children and the elderly. It is characterized with inflammatory, erythema or violet, painful or itchy cutaneous lesions affecting distal extremities, particularly the fingers and toes.^{2,3} An extensive literature search could not find any reports of nail deformities due to pernio. Here, we present a pernio case that developed nail deformities after extended exposure to cold, if combined with other facilitating factors.

Case Report

A 37-year-old male patient with a pernio history of about 10 years, working as a construction worker in Afyon, a Turkish city that has seen the lowest winter temperatures for decades, was admitted to our clinic with complaints of red-purple hand lesions and the finger nails of both hands which were dystrophic. Besides, the nail plate had a hyperaemic ground and was slightly purple in colour (Figure). The hand nails of patient had longitudinal ridges from place to place, as in the eczema of nail. The patient's history revealed that the patient smoked 5 cigarettes a day for 15 years and that nail deformities developed in

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Figure: Nail deformities in pernio.

recent months, and he previously had violet, painful skin lesions only on finger tips during winter months. His tests including full blood count, thyroid function tests, antinuclear antibody, cryoglobulin, cryofibrinogen, cold agglutinins, antiphospholipid antibodies and serum protein electrophoresis, which were performed to determine the etiology, were within normal ranges. The patient's history also revealed that the patient's complaints increased even more in recent cold temperature as low as -28 degrees Celcius, resulting in nail deformities. The patient was recommended to quit smoking and sufficiently protect himself from cold, together with oral non-steroidal anti-inflammatory drug and Nifedipine.

Discussion

Nail dystrophy may occur together with other skin diseases like psoriasis, vitiligo, lichen planus, and alopecia areata.⁴ For example, it may be considered a finding especially when eczema is in the posterior nail folding. Eczema of the nail manifests itself in the form of horizontal grooves. Our patient had no history of coexisting skin disease. But the hands nails of our patient had longitudinal ridges from place to place, as in the eczema of nail.

Pernio is a reaction to cold, and although genetic factors,

bad nutritional habits, anorexia, hormonal changes, systemic diseases, focal sepsis, dysproteinaemia and myelodysplastic diseases play roles in its etiology, which remains unclear.⁵ Some studies describe pernio as vasculopathy. Lesions grow as a result of the impairment of the neurovascular response after dermal temperature change in sensitive individuals. Vasodilator reflex induced by cold intermittently opens up the bloodstream vessels in order to protect the skin from ischaemia and maintain reperfusion. In patients with pernio, vasoconstriction induced by persistent and extended cold leads to hypoxaemia and inflammatory reaction secondary to it.⁶⁻⁸ When they coexist with pernio lesions and are accompanied by erythema and oedema in the nail region, nail deformations can suggest nail disorders of severe pernio.

The sensitive, itchy, red or purple lesions found in clinical examination can be ulcerated or develop bullae from time to time. It generally affects fingers and toes, distal parts of lower extremities, heels, thighs and ears. Lesions are typically circumscribed in 3 weeks. Lesions can continue to appear even in summer months in very severe cases. A previous study has reported clinical data in paediatric pernio cases to be 82% swelling in fingers, 64% swelling in proximal interphalangeal joints, 55% skin ulceration, and 46% dry and irritated skin. All cases had normal nail bed capillary microscopy findings.⁹ In our patient, the lesions were particularly localized on the hands, with swelling on the fingers, skin ulceration, dry and irritated skin and dystrophic changes on the nails.

Calcium channel blocker (Nifedipine 30-40 mg/days), diltiazem, tamoxifen, and nicotinic acid, and in some patients, topical minoxidil and phototherapy were used as

drugs, in addition to prophylactic methods, for treatment purposes. A non-steroidal anti-inflammatory drug and Nifedipine were chosen in our patient since inflammation was marked.

Conclusion

In extended and severe cases of pernio, inflammatory response can lead to nail deformities through chronic damage in the nail matrix. We believe that nail changes secondary to the inflammation that appears in eczema may occur when an inflammatory response develops in addition to vasoconstriction in severe pernio cases.

Training patients with pernio about factors worsening the condition such as smoking and particularly about considerations during winter months will definitely prevent reappearance, and the addition of vasodilators into the treatment plan will certainly reduce the effects of permanent negative effects of the disease.

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