

Unilateral Palmar Callus and Irritant Hand Eczema – Underreported Signs of Dependency on Crutches

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Abstract

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Leg amputees who can't use prostheses and patients with arthritis are often dependent on crutches. Their chronic use can exert significant friction forces. The palmar skin will respond by forming a hyperkeratotic callus. We report for the first time unilateral palmar callus formation caused by friction from using crutches. Another possible adverse effect is the triggering of irritant contact dermatitis by the handholes of crutches. We report two cases with hand dermatitis due to the chronic dependence on crutches and discuss treatment options.

Introduction

The skin is a barrier to the external environment. Chronic mechanical forces lead to cutaneous responses such as bullae, callus, corn or ulceration. The type of responses is dependent upon the amplitude and frequency of mechanical stressors [1].

The callus is epidermal hyperplasia and hyperkeratosis following mild to moderate rubbing under mechanical stress and friction. They can be due to occupation, sports or peripheral neuropathy [2][3][4]. They have to be differentiated from the genetically heterogeneous palmoplantar keratodermas, characterised by erythema and

hyperkeratosis [5][6]. Epidermolysis or acantholytic dyskeratosis may be present or absent.

Here we focus on underreported side effects of chronic use of crutches.

Case reports

1. A 66-year-old male patient was referred to our outpatient clinic since he had a hyperkeratotic plaque on the heel of his hand. On examination, we observed a 5 x 4 cm large hyperkeratotic, yellowish hard plaque on the heel of his right hand (Fig. 1).



Figure 1: Unilateral massive callus formation on the heel of the hand

The other hand was unchanged. He reported no response to rubbing with a pumice stone after soaking the hand in hot water, topical retinoids, and topical urea- or salicylic acid-containing ointments. He had an upper leg amputation after an accident on his right side. He used to walk with two crutches. The diagnosis of a callus caused by crutches was made. He was offered surgical removal of the callus and a modification of his crutches to reduce the frictional forces.

2. A 50-year-old female was referred from the rheumatologists due to palmar lesions. She suffered from rheumatoid arthritis and used crutches for walking. On examination, we observed an eczematous infiltrated and lichenified skin of the thenar and antithenar of her hand. From time to time she developed itching vesicles in this area (Fig. 2).



Figure 2: Chronic irritant hand eczema. (a) Clinical presentation; (b) the responsible handhole

When she was using the crutches for a longer time, continuously her hands became hyperhidrotic. A patch test series was positive for nickel only. The diagnosis of mechanically triggered hand eczema and cheiropompholyx was made due to the use of crutches. We prescribed antihidrotic topical solutions and topical corticosteroids and recommended a change of the handholes.

Discussion

Crutches are an aid for handicapped people such as leg amputees, patients with severe arthritis, vertigo, rheumatologic disorders, after surgery etc. Their use aims to improve or secure a certain degree

of mobility. Sometimes they are the source of complaints. Here we reported two cases with cutaneous lesions of the palms. The first patient needed the crutches due to amputation of his right leg. Although the preferred localization of calluses is the feet and legs, they have also been seen on glabrous skin of fingers and hands as in our case. Calluses of the palms have to be differentiated from acquired and genetic hyperkeratosis of other etiologies [5][6]. These plaques are not only unsightly, but may become malodorous due to secondary bacterial and/or mycotic infection, or may become even painful.

In the presented male patient, we need a surgical removal and modifications of the handholes of the crutches. His unilateral callus formation was mainly due to the right-sided instability after complete loss of his right leg. In the second case, the rougher surface of the handhole caused a chronic irritant hand eczema that was from time to time worsened by cheiropompholyx. Hyperhidrosis can be an aggravating factor for eczema known from occupational dermatology [7]. It is quite typical in cheiropompholyx to have a type-IV nickel sensitization as in our case [8]. A contact allergy to the grip material could be excluded.

The recognition and treatment of hand dermatoses is of great practical importance for patients depending on the use of crutches.

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