

Letter to Editor

## Double Deception: Crusted Scabies Masquerading as Palmoplantar Keratoderma in Twin Infants

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Dear Editor,

Crusted scabies is a severe, highly contagious hyperinfestation of *Sarcoptes scabiei* that produces diffuse, crusted hyperkeratotic plaques on an erythematous base. It is classically reported in immunocompromised patients.<sup>[1]</sup> We report an unusual case of crusted scabies in immunocompetent twin infants, presenting as diffuse palmoplantar keratoderma.

Two 5-month-old twin boys, born through full-term normal vaginal delivery to consanguineous parents, presented with a 1-month history of progressive red lesions on the abdomen and scaly-crusted plaques on the palms and soles. The twins had normal developmental milestones and were appropriately vaccinated for their age. On examination, both were well-nourished and adequately hydrated, weighing 4.5 kg and 5 kg, respectively. The dermatological examination revealed diffuse erythematous papules, pustules and fine scaling across the body. Thick, dirty-yellow hyperkeratotic plaques with a sharp cut-off at the wrists and ankles were noted on the hands and feet, accompanied by prominent subungual debris [Figures 1 and 2]. Systemic examination and routine investigations were within normal limits. Based on these clinical findings, differential diagnoses of ichthyosis, eczema and palmoplantar keratoderma were considered. Since the twins had a neonatal presentation with pronounced hyperkeratosis and thick, plate-like scales with fissures, they suggested an inherited condition consistent with Harlequin ichthyosis. However, neither twin showed the typical facial features of ectropion or eclabium. Generalised scaling and erythema are also seen in congenital ichthyosiform erythroderma; however, the scales are usually finer in contrast to our case. Absence of blistering ruled out bullous ichthyosis in our list of differentials. The erythema, inflammation and vesicular lesions could also be attributed to eczema; however, the striking palmoplantar hyperkeratosis with subungual debris excluded it as a possibility. The thick hyperkeratosis seen on palms and soles was suggestive of palmoplantar keratoderma; however, the generalised erythema prompted further evaluation. Dermoscopy showed a brownish-grey triangle with a whitish line extending from the triangle (jet with contrail/delta wing sign) [Figure 3a]. A 10% potassium hydroxide (KOH) mount of skin scrapings revealed numerous scabies mites and eggs [Figure 3b], confirming a diagnosis of crusted scabies. The babies tested negative for antibodies against human immunodeficiency virus (HIV) and their routine investigations were within normal limits. The babies could not be evaluated for immunoglobulin levels due to resource limitations. Treatment was initiated with overnight application of 5% permethrin cream on alternate days and daily use of topical crotamiton. Given the highly contagious nature of the infestation, both parents and the grandmother, who also had scabies, were treated simultaneously.

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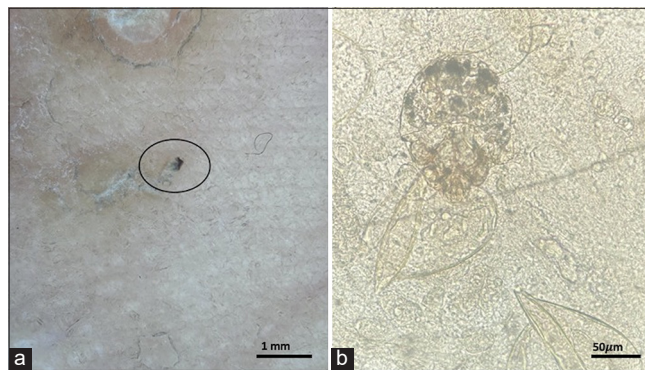
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**Figure 1:** Clinical image of twins showing diffuse erythematous papules and pustules with desquamation. Diffuse crusted hyperkeratotic plaques with fissures prominent on bilateral hands, feet and extensor aspect of the elbows.



**Figure 2:** Clinical image with diffuse crusted hyperkeratotic plaques with fissures seen prominently on bilateral (a) Palmar and (b) Plantar surfaces.



**Figure 3:** (a) Dermoscopic image of wrist showing a brownish-grey triangle (delta wing sign) at the end of a greyish-white line (black circle) (Polarised, contact, DermLite DL3N,  $\times 10$ ). (b) Photomicrograph ( $\times 40$ ) of 10% KOH mount of skin scrapings showing scabies mite with multiple eggs. KOH: Potassium hydroxide.

Crusted scabies are typically associated with immunosuppression, including HIV/acquired immunodeficiency syndrome, malignancies, congenital immunodeficiencies and prolonged corticosteroid use.<sup>[1]</sup> However, our case is unique as it occurred in otherwise healthy, immunocompetent infants. Despite our inability to test for immunoglobulin levels, a normal vaginal birth with no antenatal or postnatal complications, no history of frequent respiratory infections or diarrhoea and no history of topical or systemic steroid or immunosuppressant use or any other systemic disease was largely suggestive of an immunocompetent status. The twins also had negative retroviral status, and their growth parameters, developmental milestones and immunisation were appropriate for age. This challenges the conventional understanding that immunosuppression is a prerequisite for the development of crusted scabies.

There have been only a few such cases reported in the literature so far, especially in infants. In our appraisal of literature, we could find only two such cases, including a 4½-month-old baby girl with generalised pruritic papular eruption who responded to two doses of topical 5% permethrin administered 1 week apart as reported by Baysal *et al.*<sup>[2]</sup> The second case by Leung *et al.* demonstrated an 11-month-old baby with an intensely pruritic, crusted, excoriated rash initially misdiagnosed as atopic dermatitis.<sup>[1]</sup> In both these cases, diagnosis was confirmed by KOH mount of skin scrapings. In our case, dermoscopy proved to be an advantageous non-invasive outpatient department tool to establish the diagnosis even without a KOH mount. The possible mechanisms of crusted scabies in immunocompetent hosts are multifactorial. Even in immunocompetent hosts, an imbalance in T-cell subsets, especially an increased Th2 response and decreased Th1 cytokines like interferon-gamma, leads to ineffective mite clearance. Increased CD8+ cytotoxic T cells may contribute to

skin damage without eradicating the mite burden.<sup>[3]</sup> Certain Human Leukocyte Antigen (HLA) types (HLA-A11) have been associated with susceptibility in some populations, such as Australian Aborigines who exhibit normal immunity but develop crusted scabies.<sup>[4]</sup> Reduced cutaneous sensation and inability to mechanically remove mites by scratching can contribute to mite proliferation even in the absence of classic immunosuppression such as in neonates. There is also evidence that skin-homing cytotoxic T cells and decreased B cell function can lead to an impaired skin immune response, allowing uncontrolled mite growth. High levels of immunoglobulin E, immunoglobulin G4, eosinophilia and altered cytokine milieu are noted in crusted scabies patients.<sup>[3]</sup>

This case underscores the urgent need for early recognition and aggressive treatment of crusted scabies in infants, even in the absence of obvious immunosuppression.

**Ethical approval:** Institutional Review Board approval is not required.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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