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Atypical Hand-Foot-and-Mouth Disease

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A 10-month-old boy with a history of chronic flexural atopic dermatitis presented with a temperature of 39.4°C. Accompanying his fever was a severe erythematous rash that included macules, papules, and vesicles in different stages of healing on his proximal and distal lower extremities (**Figures 1 and 2**). The rash did not appear to bother the patient, and no rhinorrhea, cough, diarrhea, or vomiting were present. His fever trended downward over the following 24 hours while the rash spread over his body to include the torso and proximal extremities.

Figure 1. *A maculopapular rash with shallow ulceration and vesicles present on the patient's*

Figure 1. *A maculopapular rash with shallow ulceration and vesicles present on the patient's lower extremities at initial presentation.*

Figure 2. *A grouping of lesions on the patient's lower extremities at initial presentation*

Differential diagnosis. The differential diagnosis included roseola, eczema herpeticum, eczema coxsackium, and varicella. The rash's presence during the onset of fever and its vesicular nature made roseola less likely. While the vesicular nature and grouping of lesions supported the diagnosis of eczema herpeticum, the lack of associated symptoms made this less likely. The lack of enanthem and lack of lesions on the palms and soles made eczema coxsackium less likely; however, the patient's lack of irritation and the nature of the lesions supported this diagnosis. The rash in different stages of healing and fever also supported a diagnosis of varicella.

After 4 days of monitoring, vesicular lesions began to appear on the patient's palms, soles, and mouth (**Figures 3 and 4**). A diagnosis of hand-foot-and-mouth disease (HFMD) complicated by eczema coxsackium was made.

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Figure 3. *Lesions on the patient's hands on day 5 of illness.*

Figure 4. *Lesions on the patient's mouth on day 5 of illness.*

One week after the child's presentation, his father had developed a fever (temperature, 38.3°C), body aches, and a sore throat with posterior palatal petechiae. One day later, the father developed sharp pain in the hands followed by a vesicular rash on his palms and soles (**Figure 5**). This presentation was consistent with HFMD.

Figure 5. *Painful lesions on the father's foot, approximately 1 week after the son's initial presentation.*

At a follow-up visit 3 months later, the son had postinflammatory hypopigmentation on the upper and lower extremities, while the father still exhibited onychomadesis—the periodic shedding of the proximal nail, a well-documented but less prevalent sequela of HFMD. The father still had painful lesions at this visit, but they eventually resolved with time.

Discussion. HFMD is a common viral disease that most often is caused by coxsackievirus A16 and enterovirus 71; however, other coxsackievirus serotypes also have been isolated, including A5, A6, A7, A9, A10, B2, and B5.[1] HFMD most commonly affects children; involvement in adults is rare.[1] It is typically a self-limited illness. Treatment is symptomatic, with spontaneous resolution usually occurring within 2 weeks.[1]

Our patient's case is an atypical presentation of HFMD. The lack of rash on the patient's palms, soles, and mouth at the initial presentation made for a difficult clinical diagnosis. The World

soles, and mouth at the initial presentation made for a difficult clinical diagnosis. The World

Health Organization's case definition of HFMD includes "febrile illness with papulovesicular rash on palms and soles, with or without vesicles/ulcers in the mouth."[2] One study of 3649 cases of HFMD found that patients presented with lesions on the hands in 91.0% of cases, on the feet in 86.8% of cases, and on the oral mucosa in 73.6% of cases.[3] Another study of 80 cases found that 55% of the patients with atypical HFMD had atypical rash associated with underlying eczema.[4] Without these characteristic clinical manifestations, the diagnosis of HFMD is difficult to make.

Transmission of HFMD to the patient's father adds an interesting educational point. Health care providers generally do not caution caregivers about the spread of this disease, given its low prevalence rate in the adult population. One of the largest population-based studies of HFMD found that the occurrence rate of this disease falls off very quickly with age.[5]

Although health care providers commonly reassure adults that there is a low likelihood of transmission to caregivers, intrafamilial transference of the HFMD virus may be more common than previously had been thought. One study found intrafamilial enterovirus 71 transmission rates, defined by a positive viral culture or seropositivity of anti-enterovirus 71 antibodies, were 84% for siblings, 83% for cousins sharing a household, and 41% for a direct caregiver compared with 26% for other adults sharing a household.[6] It is less clear how often adults demonstrate clinical manifestations after seroconversion. Caregivers of infants may be at greater risk due to the viral spread through the fecal-oral route.

Despite the rare occurrence of HFMD in adults, other case reports have documented coxsackievirus and enterovirus infection in immunocompetent adults.[1] Coxsackievirus A6 has previously caused clustered cases of HFMD in adults, prompting interest in further genotyping and surveillance of the HFMD virus.[7] Awareness education should be provided to exposed individuals on how to minimize risk when caring for a sick child in a shared household.

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