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<th>Hand, foot and mouth disease in an immunocompetent adult due to Coxsackievirus A6</th>
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Hand, foot and mouth disease (HFMD) is a highly contagious viral infection that most commonly occurs in children less than 10 years old. The commonest causes are Coxsackievirus A16 (CVA16) and Enterovirus type 71 (EV-71). In Hong Kong, Coxsackievirus A, Coxsackievirus B, and EV-71 accounted for 66.7%, 14.7%, and 9.8% of HFMD cases in 2009, respectively. Hand, foot and mouth disease has also been reported in immunocompetent adults; in one such report it was confirmed to be due to EV-71. We report a case in an immunocompetent adult due to Coxsackievirus A6 (CVA6), which is one of the recognised enteroviruses associated with this disorder.

Case report
A 37-year-old Chinese man developed vesicles over the hands, foot, and mouth for 4 days in June 2011. He had good past health and was not on any medications. Two weeks earlier, his 9-month-old son developed similar vesicles over the hands, foot and mouth, and was diagnosed to have HFMD. The patient complained of feverishness, sore throat, muscle pain and painful skin lesions. On physical examination, he was noted to have multiple erythematous papules and vesicles over the palms and dorsum of foot (Fig 1). Vesicles were also noted on the hard palate (Fig 2). Other areas such as the face and trunk were spared. Blood tests, including complete blood picture and routine biochemistry, were within normal limits. Real-time polymerase chain reaction (RT-PCR) of vesicular fluid from the feet, throat swab, and rectal swab were positive for CVA6. Since the disease is highly contagious, to contain the infection it is prudent to recognise that hand, foot and mouth disease can occur in immunocompetent adults.
The lesions resolved spontaneously. Upon follow-up after 2 weeks, no skin lesions were detected.

Discussion

Hand, foot and mouth disease usually affects children less than 10 years old and ensues in summer from June to October. Prodromal features can include fever, myalgia, and the abdominal pain. Erythematous papules develop in the oral cavity, palms, and feet. The lesions then evolve into vesicles and resolve spontaneously within 1 to 2 weeks. Most commonly the lesions are asymptomatic, but can be painful to touch or pressure. The disease is mainly transmitted by the faecal-oral route, respiratory droplets, salivary contact, and contact with lesions on hands. Our patient probably contracted the infection via close physical contact with his son, via changing of a diaper or other hygiene lapse.

Being a highly contagious viral infection, HFMD can be caused by several enteroviruses, but most commonly CVA16 and EV-71. The microbiological diagnosis can be made by viral culture or RT-PCR of the vesicular fluid aspirated from the skin lesion and naso/oro-pharyngeal swabs. Serological diagnosis depends on demonstrating a 4-fold increase in neutralising antibody titre 10 to 14 days after the onset of illness. The disease caused by CVA6 was previously reported in Finland in an outbreak in 2008 and included one adult whose immune status was unknown. It was also reported in northern Taiwan and Guangzhou. In northern Taiwan, the proportion of CVA6 among total enterovirus isolates increased from 15.47% in 2007 to 22.27% in 2009; 98.6% of the patients were under 6 years old, 12.8% of the patients with CVA6 manifested as HFMD and the most prevalent season was from March to September. In the study in Guangzhou in 2008, CVA6 accounted for 0.7% of HFMD. The apparent lower prevalence of CVA6 as compared with other enteroviruses (e.g. CVA16) is possibly due to the difficulty for CVA6 to grow in cell culture unless the appropriate PCR system is used. In view of typical history, clinical examination findings, and positive RT-PCR for enterovirus from vesicles on the feet, throat swab and rectal swab, no skin biopsy was performed. Typical histological skin findings included reticular and ballooning degeneration of the epidermis without inclusion bodies or multinucleated giant cells.

Most of the time patients just undergo symptomatic treatment as the disease is self-limiting. However, severe complications including aseptic meningitis, pneumonia, and cardiomyositis have been reported. Since the disease is highly contagious and patients who are old, immunocompromised, or pregnant may develop severe complications, early diagnosis and appropriate infection-control precautions are important. Our fit adult patient required only standard precautions. Prompt counselling was therefore given to our patient with regard to hygiene precautions. These included wearing a surgical mask, hand washing, and washing items with 1:50 diluted household bleach (ie one part of 5.25% hypochlorite solution added to 49 parts of water).

In summary, HFMD can occur in immunocompetent persons and clinicians should be aware of this possibility, in order to contain the infection and avoid spreading it to more vulnerable persons. Patients should also avoid close contact (kissing, hugging, sharing eating utensils, etc) with uninfected persons, till all lesions dry up.
References