

# Hand, foot and mouth disease in an immunocompetent adult due to Coxsackievirus A6

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Hand, foot and mouth disease most commonly occurs in children less than 10 years old, but can occur in immunocompetent adults. We describe a 37-year-old immunocompetent man who presented with multiple painful papules and vesicles on his palms and feet together with vesicles inside the mouth. Real-time polymerase chain reaction revealed Coxsackievirus A6 in the vesicle fluid from the feet, throat swab, and rectal swab. 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.

## Introduction

Hand, foot and mouth disease (HFMD) is a highly contagious viral infection that most commonly occurs in children less than 10 years old.<sup>1,2</sup> The commonest causes are Coxsackievirus A16 (CVA16) and *Enterovirus* type 71 (EV-71).<sup>3</sup> 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.<sup>4</sup> The disease occurs only rarely in adults, and has been reported in immunocompromised patients having chemotherapy, and common variable immunodeficiency.<sup>5,6</sup> 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.<sup>1,2</sup> 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 foot, throat, and rectal swabs were positive for CVA6. Thus, the diagnosis was based on the history, typical clinical findings, and the RT-PCR. The patient was counselled on the importance of wearing a surgical mask and hand washing, and treated symptomatically.

### Key word

Hand, foot and mouth disease

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FIG 1. Multiple erythematous tender papules and vesicles on the palm and dorsum of foot



FIG 2. Vesicles on the hard palate of the oral mucosa

## 柯薩奇病毒A6型引致一名免疫功能正常的成年人出現手足口病

手足口病一般發生在10歲以下的兒童，但也可以出現在免疫功能正常的成年人身上。本文報告一名37歲免疫功能正常的男性，他病發時多處出現丘疹並引起痛楚，病人的手掌、腳和口腔都有水泡。實時聚合酶鏈反應結果顯示無論在病人右腳上的囊泡液、咽拭子和肛拭均發現柯薩奇病毒A6型。手足口病傳染性極強，縱使是免疫功能正常的成年人都有機會受感染，故應加強預防感染控制的措施。

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.<sup>1,2</sup> 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.<sup>7</sup> 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.<sup>8</sup> It was also reported in northern Taiwan<sup>9</sup> and Guangzhou.<sup>10</sup> 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.<sup>9</sup> In the study in Guangzhou in 2008, CVA6 accounted for 0.7% of HFMD.<sup>10</sup> The apparent lower prevalence of CVA6 as compared with other enteroviruses (eg 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.<sup>1</sup>

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.<sup>1,2,5,6,8</sup> 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).<sup>7</sup>

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.

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