

THE CLINICAL PICTURE

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Varicella-zoster virus transmission from herpes zoster exposure

A PREVIOUSLY HEALTHY 17-YEAR-OLD BOY presented with fever (38°C [100.4°F]) and rash. Physical examination revealed a generalized vesicular rash, without dermatomal distribution (**Figure 1**). Two weeks before symptom onset, the patient's mother had developed herpes zoster (shingles) on her torso. The herpes zoster lesions were covered, and no direct contact was reported. The patient had completed his routine childhood immunizations but did not receive the varicella (chickenpox) vaccination because it was voluntary in Japan at that time. He was presumed to have had chickenpox as a child, although confirmation could not be made because of a lack of clinical records.

The patient was treated with oral valacyclovir 1,500 mg/day for 5 days, which led to gradual resolution of fever and rash without complications. Paired serologic testing done 4 weeks apart showed a 4-fold increase in immunoglobulin M antibodies to varicella-zoster virus (from 1.15 to 4.88) and a 7-fold increase in immunoglobulin G antibodies (from 3.9 to 28.0), confirming primary varicella infection. Given the close household exposure and lack of prior immunity, the patient likely contracted varicella from his mother.

■ HERPES ZOSTER CAN CAUSE VARICELLA INFECTION

Varicella-zoster virus causes both varicella (primary infection) and herpes zoster (reactivation). Varicella is highly contagious, and patients typically present with fever, malaise, and a characteristic generalized vesicular rash that progresses through macular, papular, vesicular, and crusted stages. While varicella is usually self-limiting in healthy children, it can be more severe in adolescents, adults, pregnant women, and immunocompromised individuals.¹ Serious complications

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Figure 1. Disseminated vesicular rash with umbilication on the back of an adolescent patient diagnosed with primary varicella after household exposure to herpes zoster.

include varicella pneumonia, bacterial superinfection (often with group A *Streptococcus*), and encephalitis.²

Varicella is a significant public health concern due to its airborne transmission and potential severity in the at-risk populations noted above. Individuals with

varicella or herpes zoster can spread varicella to others through direct contact with fluid from lesions or aerosolized droplets from coughing or sneezing. Although the patient's mother had localized herpes zoster, which is considered less infectious than disseminated herpes zoster, several reports have documented airborne spread of varicella-zoster virus from patients with localized herpes zoster to individuals at risk of infection, not only in households but also in schools and healthcare settings.^{1,3,4} Universal varicella vaccination programs have significantly reduced disease incidence and complications like severe illness, hospitalizations, and death, especially in children.⁵ However, vaccination gaps remain in regions where immunization is voluntary or documentation is based on unreliable varicella infection histories.⁶

Differential diagnoses for diffuse vesicular lesions include disseminated herpes zoster; eczema herpeticum; disseminated herpes simplex virus infection; and hand, foot, and mouth disease due to enteroviruses, though many other conditions may present similarly.² Diagnosis is typically confirmed by polymerase chain reaction testing of vesicular lesions for varicella-zoster

virus or paired serologic antibody testing, as was done for this patient.

■ STOPPING THE SPREAD OF VARICELLA

This case highlights the need to verify varicella immunity in adolescents and adults, especially when in contact with individuals with herpes zoster, because transmission can occur even if lesions are covered.⁴ Unreliable clinical history of varicella infection, lack of immunization records, or assumptions about childhood infection can lead to preventable adult-onset varicella infection, which can be more severe. Increased awareness that herpes zoster can cause varicella infection is essential, but the best way to prevent avoidable infections is through routine 2-dose varicella vaccination programs. In addition, adults 50 years or older should receive the herpes zoster vaccine. ■

■ DISCLOSURES

The authors report no relevant financial relationships which, in the context of their contributions, could be perceived as a potential conflict of interest.

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