

# Atypical Herpes Zoster Presentation in a Healthy Vaccinated Pediatric Patient



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## PRACTICE POINTS

- Both wild-type and vaccine-strain varicella-zoster virus (VZV) can establish latency in dorsal root ganglia and can cause herpes zoster (HZ) in vaccinated children.
- When HZ due to a vaccine strain of VZV occurs, the rash often presents near the site of initial vaccination.
- Although most cases of HZ in vaccinated children present with a characteristic HZ rash, physicians should be aware of the possibility for atypical presentations.

We report the case of a 6-year-old girl with no notable medical history who presented to the dermatology clinic for evaluation of left leg pain with an overlying erythematous rash of 4 days' duration. Clinical examination revealed pink patches and plaques in a unilateral L5 distribution with an isolated pinpoint vesicle. Direct fluorescent antibody testing confirmed varicella-zoster virus (VZV) infection, establishing a diagnosis of herpes zoster (HZ). The patient previously had received the VZV vaccine in the left leg and arm and had no history of primary VZV infection. We summarize this case and discuss the epidemiology and clinical characteristics of HZ in vaccinated children.

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Varicella-zoster virus (VZV) is a neurotropic human herpesvirus that causes varicella (chicken pox) and herpes zoster (shingles). During infection, the virus invades the dorsal root ganglia and establishes permanent latency. It can later reactivate and travel through sensory nerves to the skin where localized viral replication causes herpes zoster (HZ), which manifests with pain in a unilateral dermatomal distribution followed closely by an eruption of grouped macules and papules that evolve into vesicles on an erythematous base.<sup>1</sup> These lesions form pustules and crusts over 7 to 10 days and heal completely within 4 weeks. Although postherpetic neuralgia is rare in children, the pain associated with HZ can last months or years.<sup>1,2</sup>

Universal childhood vaccination against VZV has existed in the United States since 1995, with a 2-dose vaccine regimen recommended by the CDC since 2007. Consequently, primary varicella infection in children is uncommon, and the majority of cases now occur in the vaccinated population.<sup>3</sup> However, breakthrough varicella infection and postvaccination HZ are rare due to the long-lasting immunity and low virulence of the attenuated vaccine strain. We recount the case of a 6-year-old vaccinated girl with a unique presentation of HZ with no known primary varicella infection.

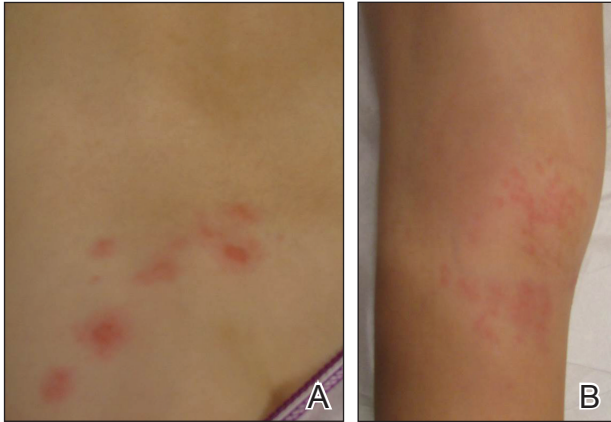
## Case Report

A healthy 6-year-old girl presented with a stabbing burning pain in the left thigh extending down the calf of 4 days' duration. The intense pain made walking difficult and responded minimally to ibuprofen and naproxen. Poor appetite, nausea, colicky abdominal pain, and fever (temperature, 38°C) accompanied the pain. Three days after the pain began she developed a pruritic rash on the same leg. Notably, she reported falling on a rosebush and sustaining a thorn prick in the left thigh 3 days prior to the onset of pain. Before presenting to our dermatology clinic, she was seen by a pediatrician, an emergency department physician, and an infectious disease specialist. The initial workup included a complete blood cell count, C-reactive protein test, erythrocyte sedimentation rate test, and hip and femur radiograph, which were all unremarkable. She was referred to dermatology with a differential diagnosis of sporotrichosis, contact dermatitis, reactive arthritis, viral myalgia, and Legg-Calvé-Perthes disease.

Physical examination revealed a well-appearing child with pink eczematous patches and plaques extending from the left side of the lower back to the mid shin in an L5 distribution (Figure). The left thigh was tender to palpation, and nontender left inguinal lymphadenopathy was present. A single isolated 2-mm vesicle was found on the anterior aspect of the left lower leg. Direct fluorescent

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Herpes zoster with pink eczematous patches and plaques extending from the left side of the lower back (A) to the mid shin (B) in an L5 distribution.

antibody testing of vesicle fluid was positive for VZV antigen, confirming the diagnosis of HZ.

The patient's mother confirmed that she had no obvious history of VZV. She had received VZV vaccinations in the left leg and arm at 1 and 4 years of age, respectively. She was treated with acyclovir (80 mg/kg daily at 6-hour intervals for 5 days) with immediate improvement in symptoms and resolution of the rash by day 5 of treatment. She experienced intermittent burning pain in the leg throughout the course of treatment, which resolved shortly thereafter.

### Comment

Herpes zoster is rare in young healthy children, and its incidence has decreased since the introduction of universal varicella vaccination.<sup>4</sup> Reported incidence rates in vaccinated children vary from approximately 15 to 93 per 100,000 person-years,<sup>5,6</sup> and the reported relative risk is 0.08 to 0.36 in vaccinated compared to unvaccinated children.<sup>6,7</sup> No correlations with gender, race, or ethnicity and postvaccination HZ have been observed.<sup>5,8</sup> Reported intervals between vaccination and HZ presentation are as short as 3 months and as long as 11 years.<sup>9</sup> Although HZ is uncommon in immunocompetent children, the diagnosis of HZ itself is not an indication for formal workup for an underlying immunodeficiency or malignancy.<sup>10</sup>

Both wild-type and vaccine-strain VZV establish latent infection and can cause HZ in vaccinated children. Direct fluorescent antibody testing or polymerase chain reaction of HZ lesions can be used to identify VZV. Genotyping can distinguish the wild-type versus the vaccine strain but is not required for clinical management.<sup>3</sup> In previously vaccinated children with HZ, approximately half present with wild-type and half with vaccine-strain VZV. In approximately half of wild-type cases, prior clinical varicella infection also occurred.<sup>8</sup>

Regardless of virus strain, vaccinated children typically present with the characteristic painful, vesicular, dermatomal HZ rash.<sup>8,9</sup> This presentation can be milder with less

pain and fewer vesicles than with unvaccinated cases.<sup>6</sup> When vaccine-strain HZ occurs, the rash often presents at or near the site of initial vaccination, which typically is the arm or thigh.<sup>3,4,6,9</sup> The vaccine strain has lower virulence than the wild-type virus. Eight cases of vaccine-strain zoster severe enough to cause neurological complications such as meningitis or encephalitis have been reported in children, with 6 cases reported in healthy children.<sup>9,11-17</sup> Antiviral drugs hasten the healing of the HZ rash and shorten the duration of associated pain.<sup>1</sup>

Although pediatric HZ is uncommon, all physicians should be aware of possible atypical presentations in healthy vaccinated children to appropriately and quickly manage treatment.

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