

The Very Rare Concurrency of Herpes Zoster and Varicella in a 4-Year-Old Boy

Sara Memarian¹, Mahmoud Khodabandeh¹, *Behdad Gharib¹

¹Department of Pediatrics, Children's Medical Center, Tehran University of Medical Sciences, Iran.

Abstract

Varicella is a common and worldwide disease in childhood. It causes primary (chickenpox) and latent infection that may lead to a reactivation disease called zoster (shingles). Zoster or shingles is caused by reactivation of the virus that has been latent in the spinal dorsal ganglion and may occur even in immunocompetent hosts. Although zoster is rare in children, it may happen sometimes later. The contemporaneous occurrence varicella and zoster are very rare. We present an immunocompetent 4 years old boy presented by simultaneous varicella and zoster after a household contact. In this case, the virus appeared both neurotropic and dermatropic characteristics simultaneously. This study may enhance the awareness about this rare presentation and obviate the need for unnecessary treatments and investigations for both clinicians and patients.

Key Words: Chickenpox, Herpes zoster, Varicella zoster virus infection.

*Please, cite this article as Memarian S, Khodabandeh M, Gharib B. The Very Rare Concurrency of Herpes Zoster and Varicella in a 4-Year-Old Boy. *Int J Pediatr* 2020; 8(6): 114257-428. DOI: **10.22038/ijp.2020.46220.3765**

*Corresponding Author:

Behdad Gharib, MD, Department of Pediatrics, Children's Medical Center, Tehran University of Medical Sciences, Iran.

Email: behdad_gharib@yahoo.co.uk

Received date: Jul.17, 2019; Accepted date: Feb.12, 2020

1- INTRODUCTION

The varicella virus can cause a primary and latent infection that may lead to reactivation disease (1). The typical transmission mode of the varicella virus is airborne particles. As some individuals have had antibodies to varicella, it is suggested that subclinical forms of the virus also may happen. Varicella presents by fever and rashes. Fever and rash may last for about 5 days. The second occurrence of varicella is uncommon unless in an abnormal immune system. Skin manifestations of varicella include macules that progress quickly to papules, vesicles, and pustules. The rash is more populated on the head and trunk than the extremities (2). Vesicles have typically an erythematous base (3). In a 2-year study conducted in all German pediatric hospitals, the median time interval between the contraction of chickenpox and zoster was 4 years (1-7 years) (4). Varicella vaccines can also lead to latent infection and cause zoster (5). Concurrent

occurrence of varicella and herpes zoster is very rare and only few cases have been reported in the literature (6). Here, we present a 4-year-old boy with a very rare case of simultaneous chickenpox and shingles.

2- CASE REPORTS

In the spring of 2019, a 4-year-old boy with skin rashes including chickenpox and zoster was referred to our hospital (Children's Medical Center, Tehran, Iran). He had about 40 papules, macules, and vesicles (active and crusted) in his face, trunk, and lower and upper limbs. The vesicles have had an erythematous base. He also had a well-demarcated vesicular and popular erythematous involvement of right lumbosacral dermatome (**Figures 1-3**). The latter involvement was typical of herpes zoster. He did not have a fever. The dermatomal rashes were painful and the other rashes were itchy. The rest of the physical examinations were normal.



Fig.1. Good demarcation of lumbosacral dermatomal distribution of vesicles and maculopapular rash that covers the right half of scrotum.



Fig.2. Papules and vesicles on the trunk and the lumbosacral dermatomal distribution of vesicles and maculopapular rash.



Fig.3. Papules and vesicles on the erythematous base.

The problem started about 5 days ago when he had a high-grade fever (39°), irritability, and mild sore throat. The following day, the skin rashes started from the face as small papules and the fever reduced. The rash spread the whole body and became more concentrated around the genitalia, scrotum, perineum, the right upper thigh, and buttock. In the next 2-3 days, the complaint and the rashes were more concentrated in the right lumbosacral dermatomes. His 12 years old brother was contracted varicella 2 weeks before the patient's presentation. Her mother did not report varicella during pregnancy and have had varicella during her childhood. The rest of the medical and family history was not significant. He did not have any history suggestive of immunodeficiency and the

vaccination schedule was on time. He had not received the varicella vaccine. The patient was prescribed oral acyclovir and conservative treatment (cold compress, analgesics, and antihistamine) and the rashes started to subside in 2 days and after 5-6 days the rashes show significant healing.

3- DISCUSSION

The primary varicella infection, which is known as chickenpox, causes a latent infection in the sensory ganglionic neurons. In healthy children with the normal immune system, the complications of varicella and zoster are rare and antiviral treatment may not be necessary. Chickenpox and zoster are mainly

diagnosed by clinical manifestations. Reactivation of the hidden infection causes Herpes Zoster. Zoster is not common in childhood, especially in children younger than 10 years, except in those who were infected in utero or during the first year of life. The patient's exposure to varicella does not cause Zoster. The primary infection has 10-21 days of the incubation period (1). Varicella virus is highly contagious. The second case in the household is usually more severe. The most common complication of varicella is bacterial (*Staphylococcus aureus* or group A β -hemolytic streptococci) infection of the skin rashes, lungs, or bones. In children with the normal immune system, a fall in cell-mediated immunity caused by stress or another infection may cause the latent infection to lead to zoster. Zoster can also involve the gastrointestinal tract and abdominal symptoms may be present before the appearance of the rashes (2). Early administration of oral acyclovir is recommended by some studies to decrease the zoster-associated pain. Children affected with the normal immune system and without severe pain are rarely prescribed with acyclovir (2). About 2-4 days after the infection, the infected T lymphocytes spread the virus to the sensory ganglia. Shingles (Herpes Zoster) can lead to the primary infection at any time (3). Vesicular rashes grouped in one dermatome (or less commonly in two adjoining dermatomes) are the characteristic of Herpes zoster. In children, the symptoms are milder than adults and complete healing may happen within 1-2 weeks. Zoster most commonly involves thoracic dermatomes in children. In addition, Postherpetic neuralgia is rare in children (7).

4- CONCLUSION

The patient presented here is a 4-years-old boy that had both typical presentation of varicella (i.e., papules, macules, and vesicles with erythematous base in the

face, trunk, and the extremities) and typical dermatomal manifestations of zoster simultaneously, which is rare for the age and the presentation. The virus presented atypical behavior and both neurotropic and dermatropic characteristics. Overall, this study may enhance the awareness about this rare presentation and obviate the need for unnecessary treatments and investigations for both clinicians and patients.

5- CONFLICT OF INTEREST: None.

6- REFERENCES

1. LaRussa Philip S, Marin M, Gershon AA. Varicella-Zoster Virus. In : Kliegman R.M., ST Geme III, Blum N.J., Shah S.S., Tasker R.C., Wilson K.M. Nelson Textbook of Pediatrics. 21st ed. Philadelphia. United States of America: Elsevier; 2020: p.1708.
2. Gershon AA, Varicella-Zoster Virus. In : Cherry J. D., Harrison G.J., Kaplan S.L., Steinbach W.J., Hotez P.J. Feigin and Cherry's Textbook of Pediatric Infectious diseases. 7th ed. Elsevier. 2014, p.2021.
3. Tom WL, Friedlander SF. Viral Exanthems. In: Irvine A.D., Hoeger P.H., Yan A.C. Harper's Textbook of Pediatric Dermatology. 3rd ed. Blackwell Publishing Ltd. 2011: p. chapter 49.
4. Grote V, Kries RV, Rosenfeld E, Belohradsky BH, Liese J., Immunocompetent Children Account for the Majority of Complications in Childhood Herpes Zoster. *The Journal of Infectious Diseases* 2007; 196:1455-58.
5. Moodley A, Swanson J, Grose C, Bonthius DJ. Severe Herpes Zoster Following Varicella Vaccination in Immunocompetent Young Children. *Journal of Child Neurology* 2019; 34(4): 184-88.
6. Jaiswal P, Chowdhry S, Dhali TK. Contemporaneous Herpes zoster and Chicken Pox in a Child. *Dermatitis* 2018; 3:1.
7. Lanker AM, Jeelani S, Jeelani N. Herpes zoster in the pediatric age group: study from a tertiary care hospital. *Int J Contemp Pediatr.* 2015; 2(4):321-24.