Case Report
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Herpes zoster case with extremity involvement after chickenpox infection in a healthy infant

Sağlıklı bir infantta suçiçeği enfeksiyonu sonrası gelişen ekstremite tutulumlu herpes zoster olgusu

Gözde Emel Gökçek, Emine Çölgeçen

Yozgat Bozok University Faculty of Medicine, Department of Dematology, Yozgat, Turkey

Abstract

Herpes zoster is a dermatomal condition characterized by painful vesiculopapules on an erythematous background, resulting from the reactivation of varicella-zoster virus (VZV) hidden in the dorsal root ganglia. Although it is more common in older and immunosuppressed people, it can be seen at any age. It very rarely occurs in the infantile period, and in healthy infants, herpes zoster usually develops after intrauterine exposure to the virus. Herein, we present the case of a 12-month-old girl who developed a rare form of herpes zoster on the extremities after postnatal VZV exposure.
Keywords: Herpes zoster, infant, chickenpox

Öz

Herpes zoster, dorsal kök gangliyonlarında saklı kalan varicella-zoster virüsünün (VZV) reaktivasyonu sonucu oluşan, dermatomal tutulum gösteren, eritemli zeminde, ağrılı vezikülopapüllerle karakterize bir hastalıktır. İleri yaştaki ve immünosüprese kişilerde daha sık karşılaşılmakla birlikte her yaşta görülebilir. İnfantil dönemde ise çok nadirdir ve sağlıklı infantlarda genellikle virüse intrauterin maruziyet sonrası herpes zoster kliniği gelişir. Bu yazıda, postnatal VZV maruziyeti sonrası, nadir bir tutulum şekli olan ekstremite yerleşimli herpes zoster tablosu olan 12 aylık bir kız çocuğu sunulmuştur.
Anahtar Kelimeler: Herpes zoster, infant, suçiçeği

Introduction

Varicella-zoster virus (VZV), a member of the herpes virus family, is a double-stranded and enveloped DNA virus. It can lead to two types of diseases, namely, chickenpox and herpes zoster. Chickenpox is a benign disease identified by vesicular skin lesions, primarily found in children, transmitted by droplets. VZV remains hidden in the cranial nerve and dorsal root ganglia after chickenpox infection. Secondary infection occurs on the skin fitting the dermatome area of the sensory nerve, where the virus is reactivated in conditions such as emotional stress, severe illness, and immunosuppression, known as herpes zoster. Although herpes zoster is more common in the older population because of decreased virus-specific cellular immune response, it can be observed in any age group.

Although herpes zoster is considered rare in children and is essentially observed in children with immunosuppression,

Address for Correspondence/Yazışma Adresi: Gözde Emel Gökçek MD, Yozgat Bozok University Faculty of Medicine, Department of Dematology, Yozgat, Turkey
Phone: +90 554 459 42 84 E-mail: gozdegorek89@hotmail.com **Received/Geliş Tarihi:** 24.12.2020 **Accepted/Kabul Tarihi:** 20.05.2021
ORCID: orcid.org/0000-0003-1067-6795

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recent studies have reported that the incidence in healthy children also increases[1].

Nevertheless, herpes zoster cases reported during infancy are exceptional and may be caused by intrauterine or postnatal exposure to the virus throughout this period. Infantile period cases due to both settings have been encountered, but postnatal encounters are less reported. In the present case, chickenpox infection developed first, and herpes zoster developed after exposure to VZV in the postnatal period. This case is valuable given the rarity of this condition in this age group and the rarity of extremity involvement.

Permission was obtained from the patient's mother, the patient's legal representative, to share the case and photographs.

Case Report

A 12-month, 18-day-old girl was brought to our polyclinic with the complaint of a red, watery rash on her shoulder and arm. In the anamnesis taken from the patient's mother, the lesions started about 3 days ago, and they did not bring the child to the examination since they initially thought it was an insect bite. However, when the redness increased and the lesions turned into watery sores, they consulted the polyclinic. The patient had no fever, restlessness, feeding, or sleep problems. She is the third child born at term from her mother's third pregnancy. The patient had chickenpox when she was 6 months old, together with her two brothers. The patient had regular vaccination and had received her 1-year-old measles-rubella-mumps conjugated pneumococcal and varicella vaccines 2 weeks before the examination. She had no known chronic disease or history of frequent infections. There was no consanguineous marriage between the parents. Her mother did not have chickenpox or herpes zoster in the prenatal period. Dermatological examination revealed dermatomal vesicular lesions starting from the left shoulder region, extending to the left wrist, with an erythematous background, and tending to group (Figure 1). Other physical examination findings were normal. Complete blood count, sedimentation rate, biochemical values, and immunoglobulin levels were within normal limits. A serological examination was not performed for VZV, as its clinical manifestations are typical for herpes zoster. Based on the history and clinical findings, the patient was diagnosed with zona zoster, and topical fusidic acid treatment with acyclovir suspension was administered. After the treatment, all lesions healed with hemorrhagic crusts, and no complications were observed in the follow-up.

Figure 1. Grouped vesiculopapular lesions on an erythematous background in the dermatome area extending from the left shoulder to the wrist

Table 1. Rates of zoster involvement in children and adults

	Children (%)	Adults (%)
Thoracic	65	57
Cervical	13	11
Lumbar	11	13
Cranial	5	13
Sacral	4	4
Disseminated	2	2

Discussion

After chickenpox infection following initial exposure to VZV, the virus remains hidden in the dorsal root ganglia. In the presence of certain triggering conditions, it may react and cause highly painful, grouped vesiculopapular lesions on an erythematous background in the dermatomal skin similar to the innervation area of the ganglion, where it is hidden[1]. Chickenpox is known as the childhood disease, while herpes zoster is recognized as the adulthood disease. The incidence of herpes zoster in the population aged 0-5 years is 0.2/1,000[2,3]. Although conditions that cause immunosuppression such as malignancies, drugs, surgical procedures, and trauma, physical or emotional stresses are among the triggering factors, and the cause of reactivation is not always known. Studies in pediatric patients have not supported the requirement to search for an underlying immunodeficiency, malignancy, or human immunodeficiency virus (HIV) infection, contrary to what was thought in cases of childhood herpes zoster[4]. Pediatric malignancies most commonly associated with herpes zoster are leukemia and Hodgkin lymphoma. However, herpes zoster often does not precede the clinical manifestations of these malignancies but is more associated with chemotherapy or disease recurrence[5]. Herpes zoster has not been reported as the first manifestation of HIV infection in children. In Central Africa, where HIV infection is endemic, herpes zoster may be the first manifestation of HIV infection[6]. In the present case, the patient had no other disease, her general condition was good, and laboratory values were within the normal limits.

Herpes zoster is infrequently seen in infancy. Studies in pediatric patients with herpes zoster have revealed that the most common risk factor is chickenpox infection before age 1 year[5]. It is defined by the insufficient development of the humoral and cellular immunity against VZV when chickenpox is present in the first year of life. The risk of herpes zoster in children with chickenpox in the first year of life is 4.1 cases/1,000 patients/year, while this risk is 0.45 cases/1,000 patients/

year in children who had chickenpox after age 1 year. In the present case, the patient had a history of chickenpox infection at age 6 months, and herpes zoster developed 6 months later. The duration between chickenpox infection and the development of childhood herpes zoster is 3.8 years on average if chickenpox occurred at age 1 and 6.2 years if chickenpox occurred after age 1[4]. In our case, this period was as short as 6 months.

Varicella vaccine was added to our national vaccination calendar in 2013 and is administered as a single dose at age 1. Herpes zoster can also be seen in vaccinated children. Herpes zoster may occur in vaccinated children because of wild-type or vaccine-associated VZV species. In the present case, although the patient had a history of both chickenpox infection and vaccination, the vaccine was not considered as a trigger since herpes zoster developed 9 days after the vaccination. Considering that the trigger of herpes zoster does not affect the clinical course, no further investigation was performed for discrimination purposes.

Kurlan et al.[2] reported four infants (two 7-month-old, one 4-month-old, and one 11-month-old infant), who developed herpes zoster after postnatal VZV exposure. They discovered family exposure to VZV in all four cases. Kim et al.[7] reported a 4-month-old patient with infantile herpes zoster who had both VZV exposure 2 months before diagnosis and a father's history of herpes zoster 3 months earlier. There are also case reports of 18-month, 7-month, and 6-month children developing herpes zoster due to postnatal exposure[3,8,9]. In Karagun's[10] study, five cases of infantile herpes zoster have been reported in a series of 48 patients aged <12 years; the youngest patient diagnosed in the 0-1 year age range was 5 months old. Moreover, there were reports of two 7-month-old, one 9-month-old, and one 10-month-old patient. Whether the VZV exposure in these cases was intrauterine or postnatal was not specified in the study. Tepe et al.[11] reported 6-month and 7-month-old patients from a series of 31 patients aged <16 years. Postnatal VZV exposure was observed in a 6-month-old patient. In another case series reported in our country, patients are >2 years old[1,12-16].

In children, herpes zoster most commonly affects the thoracic dermatomes (Table 1). In the present case, cervical dermatome was rarely affected. The disease is usually mild and self-limited within 1-3 weeks. Findings related to systemic infection such as fever, headache, and lymphadenopathy are rarely noted. Complications such as secondary bacterial infection, post-inflammatory hyperpigmentation, and scarring may occur. Pediatric herpes zoster is seldom associated with post-zoster neuralgia and usually resolves spontaneously in less than a week[4]. No complication was observed in the follow-up of the present case.

Anamnesis and dermatological examination are usually adequate for the diagnosis of herpes zoster. In the case of clinical suspicion, the Tzanck smear test, VZV polymerase chain reaction, VZV-specific antibody detection, and cell cultures can be used to aid in diagnosis. Since the dermatological examination findings of our patient were characteristics of herpes zoster, serological tests were not required. Herpes simplex infection, impetigo, insect bite, irritant contact dermatitis, and childhood bullous diseases should be considered in the differential diagnosis.

To treat herpes zoster in pediatric patients, the first-choice antiviral agent is acyclovir. Feder and Hoss[17] recommended antiviral therapy only in patients with ophthalmic involvement and severe rash and pain in healthy children. In another study, systemic acyclovir treatment was not considered necessary in healthy children aged 2-12 years[15]. Acyclovir treatment was given to our patient because of widespread dermatomal involvement.

Herpes zoster can be seen in childhood and adulthood, rarely in infancy. Rarely, it can be observed in the extremities. Consequently, it should be considered in the differential diagnosis of vesicular eruptions encountered in infancy.

Ethics

Informed Consent: Signed consent was obtained from the patient's guardian.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: E.Ç., Concept: G.E.G., E.Ç., Design: G.E.G., Data Collection or Processing: G.E.G., E.Ç., Analysis or Interpretation: G.E.G., E.Ç., Literature Search: G.E.G., Writing: G.E.G., E.Ç.

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