CASE REPORT

Herpes simplex transmission to chest and face through autoinoculation in an infant

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SUMMARY

A 4-month-old female infant presented with a vesicular lesion on her left hand present since 1 day. A few days prior to presentation, she had a similar lesion on the lower lip. Two days after presentation, she returned with new lesions on her thorax and upper eyelid. PCR of the vesicle was positive for herpes simplex virus type 1. The transmission to her chest and face probably resulted from autoinoculation, caused by rubbing of the hand on other parts of the body. Transmission of herpes simplex through skin-to-skin contact is a common route of infection in people engaging in contact sports. Antiviral therapy was started because of the extensiveness and expansion of lesions and risk of developing herpetic keratitis. The patient completely recovered. This case shows that in an otherwise healthy infant, multiple herpetic skin lesions were not due to disseminated infection, but through autoinoculation.

BACKGROUND

In immunocompromised individuals and neonates, multiple vesicular lesions can be due to disseminated herpes simplex virus infection, a potentially lethal condition. In contrast, herpes simplex infection at multiple sites can also occur in healthy individuals through skin-to-skin contact, as occurs in people engaging in contact sports. This is called 'herpes gladiatorum'. In this case report, 'Herpes Gladiatorum' through autoinoculation was diagnosed in an otherwise healthy infant.

CASE PRESENTATION

The patient was a previously healthy 4-month-old female infant, born at term after uneventful pregnancy and delivery with no medical history of note. Her mother was an otherwise healthy woman who had suffered from herpes labialis 1 week before her daughter's first presentation. She was known with recurrent herpes labialis for many years.

The child presented with a lesion on her left hand which was present since 1 day. She did not have any other complaints. At physical examination, she appeared to be well and afebrile. She did not have eczema and there were no other lesions of the skin present, besides a small crust on the lip. According to the mother, the lesion had evolved from one big papule, appearing as an 'insect bite', into an erosion. At first presentation, the lesion was 1 cm in diameter, encircled with small vesicles and crusts (figure 1A). Her mother was an otherwise

healthy woman who had suffered from herpes labialis 1 week before her daughter's first presentation. She was known with recurrent herpes labialis for many years.

With the working diagnosis of impetigo, she was sent home with a prescription of fusidic acid. We instructed the mother to contact us in case the lesions would expand or when more lesions would appear.

Two days later again she presented at the emergency department. The lesion on her hand had expanded and new lesions had evolved on the thorax and above her left eye (figures 1B and 2). These looked similar to the original lesion on her hand. There were no signs of systemic illness or meningitis.

A swab of the lesion on her hand was taken, and after consulting a paediatric infectious diseases specialist treatment with intravenous acyclovir was given for 4 days. We chose to treat intravenously because of the large number of lesions and the risk of evolving herpetic keratitis of the left eye. PCR of a vesicle was positive for herpes simplex virus type 1, confirming the diagnosis. A PCR in blood taken at admission was also positive for herpes simplex virus type 1. After discharge, treatment was continued with oral valacyclovir for another 6 days. Four weeks after discharge, the patient was seen at the outpatient clinic. She had completely recovered and the lesions were healed without scarring.

INVESTIGATIONS

Wound swab left hand: PCR positive for herpes simplex virus type 1.

DIFFERENTIAL DIAGNOSIS

At initial presentation, solitary lesion was provisionally diagnosed as impetigo and other differentials later with multiple lesions included: culicosis, pityriasis, eczema herpeticum, herpetic whitlow and herpes gladiatorum.

TREATMENT

After consulting a paediatric infectious diseases specialist, treatment with intravenous acyclovir was given for 4 days. We chose to treat intravenously because of the large number of lesions and the risk of evolving herpetic keratitis of the left eye. Acyclovir was given intravenously in a dose of 250 mg/m² three times daily as an inpatient, and after discharge treatment was continued with oral

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Figure 1 (A) The back of the left hand at first presentation and (B) at second presentation. Note vesicular lesions around the maculopapular skin rash.

valacyclovir for another 6 days in a dose of 20 mg/kg three times daily.

OUTCOME AND FOLLOW-UP

The infant completely recovered after treatment and was seen in the outpatient clinic 4 weeks after the diagnosis was made. The lesions completely recovered without scarring.

DISCUSSION

We hypothesise that she was infected by her mother leading to the first lesion on the lip. Through direct transmission because of sucking on the back of her hand, this resulted in herpetic whitlow, also known as digital herpes infection. The transmission to her chest and face probably resulted from autoinoculation, caused by rubbing of the hand on other parts of the body.

Figure 2 Image of the left eye at second presentation. Note multiple macular, papular and emerging vesicular lesions on both eyelids.

This contact possibly compromised the barrier of the skin giving a porte d'entrée for infection.

In this case, herpes simplex type 1 was spread by direct skin-to-skin contact. This is an uncommon way to distribute infection in infants. However, it is a common route of infection in adults engaging in contact sports, dubbed 'herpes gladiatorum'. The incidence is estimated to be up to 7.6% among wrestlers.¹ The average incubation period is 3–5 days,¹ which is similar to the case currently described. There are no previous published reports of herpes simplex infection spreading through skin-to-skin contact in infants. This case shows that in an otherwise healthy infant, multiple herpetic skin lesions were not due to disseminated infection, but through autoinoculation, resulting in a clinical phenotype similar to herpes gladiatorum.

The first lesion on the hand could be caused by herpetic whitlow (or digital herpes) spread from the oral lesions directly to the hands or feet via a port of entry in the skin.² Herpetic whitlow starts with pain and tingling and can develop into one or multiple fluid-filled vesicles with an erythematous base.³

Up to 65% of the cases of herpetic whitlow are misdiagnosed at first presentation and often these infections can reoccur.⁴ Many of these infections are in infants younger than 2 years of age.^{4,5} Treatment of the primary lesion with topical agents may be effective, but treatment guidelines of herpetic whitlow are not firmly established.⁵

Autoinoculation and dissemination of herpetic lesions are two different forms of viral expansion, and it is essential to differentiate between the two. Spread of viral lesions caused by autoinoculation is caused by direct contact with older lesions, whereas dissemination involves a spread of the lesions to other parts of the body through, for instance, the blood. Vertical transmission from parents to children in herpes infection and human papilloma virus infections have been reported previously.^{5,6} Autoinoculation then may perpetuate the transmission to other parts of the body.

Contributors JJV and DK wrote the first draft of the manuscript and were involved in its conception. JJV, KS and DK were involved in the conception of the case report. JJV, KS, EPB and DK reported the case in the manuscript, edited the manuscript and approved it for final submission.

Learning points

- ▶ Autoinoculation can occur in primary herpes simplex infections in healthy infants, resulting in a clinical phenotype similar to 'Herpes Gladiatorum'.
- ▶ Despite intrauterine exposure to herpes simplex antibodies which protects infants of mothers with a non-primary infection up to 6 months, herpes simplex infections can still occur in infancy.
- ▶ A wound swab on first presentation can help differentiate between bacterial and viral infections.
- ▶ Autoinoculation and dissemination of herpetic lesions are two different forms of viral spread and it is essential to differentiate between the two.
- ▶ It is possible to have vertical transmission of herpes simplex infection from parents to infants and children especially if they have recurrent herpes labialis despite exercising due care.

Competing interests None declared.

Patient consent Guardian consent obtained.

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