



**PERIORBITAL CELLULITIS AS A COMPLICATION OF CHICKENPOX IN  
A VACCINATED PATIENT: CASE REPORT**

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**ABSTRACT**

Primary varicella infection in children is generally a mild disease. The incidences of infection, hospitalizations, and mortality have all declined since the introduction of the varicella vaccine. Chickenpox is highly contagious, with secondary household attack rates of >90 percent in susceptible individuals. Transmission occurs in susceptible hosts via contact with aerosolized droplets from nasopharyngeal secretions of an infected individual or by direct cutaneous contact with vesicle fluid from skin lesions. Complications of varicella in children can include bacterial superinfection while pneumonia and cellulitis. Periorbital cellulitis arises most commonly from sinusitis or a contiguous infection of the soft tissues of the face and eyelids. The most common causes of periorbital cellulitis are *Staphylococcus aureus* (including community-acquired methicillin-resistant *S. aureus* [CA-MRSA]), *Streptococcus pneumoniae* and other streptococci, and anaerobes.

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**INTRODUCTION**

Varicella-zoster virus (VZV) is one of eight herpesviruses known to cause human infection and is distributed worldwide. VZV infection causes two clinically distinct forms of disease: varicella (chickenpox) and herpes zoster (shingles). Primary VZV infection results in the diffuse vesicular rash of varicella, or chickenpox. Endogenous reactivation of latent VZV typically results in a localized skin infection known as herpes zoster, or shingles. [1]

Primary varicella infection in children is generally a mild disease compared to more severe presentations in adults or immunocompromised patients of any age. The rates of infection, hospitalizations, and mortality have all declined since the introduction of the varicella vaccine in 1995.[2]

Chickenpox is highly contagious, with secondary household attack rates of >90 percent in susceptible individuals [1,2]. Transmission occurs in susceptible hosts via contact with aerosolized droplets from nasopharyngeal secretions of an infected individual or by direct cutaneous contact with vesicle fluid from skin lesions [1]. Airborne transmission of VZV to susceptible nursing staff has also been reported in a hospital

unit [3]. The average incubation period for varicella infection is 14 to 16 days, although this interval can range from 10 to 21 days [4]. The period of infectivity is generally considered to last from 48 hours prior to the onset of rash until skin lesions have fully crusted. [1]

Primary infection with VZV routinely occurs during childhood and is usually a benign self-limited illness in immunocompetent children. However, varicella can be a severe disease in adolescents, adults, and immunosuppressed or immunocompromised individuals of any age. Secondary cases in household contacts appear to be more severe than primary cases [4].

The clinical manifestations of varicella in healthy children generally develop within fifteen days after the exposure and typically include a prodrome of fever, malaise, or pharyngitis, loss of appetite [1], followed by the development of a generalized vesicular rash, usually within 24 hours. The vesicular rash of varicella, which is usually pruritic, appears in successive crops over several days. The lesions begin as macules that rapidly become papules followed by characteristic vesicles; these lesions can then develop a

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pustular component followed by the formation of crusted papules [4]

A survey was conducted from 1990 to 1992 of over 250,000 members of a health maintenance organization to assess the epidemiology of varicella and its complications. Following a medical record review process, a total of 107 confirmed complications were identified, including bacterial skin infections and pneumonia. Skin infections like cellulitis were associated with the most hospitalizations in the youngest age group (<15 years of age); pneumonia was associated with hospitalization in persons >19 years of age. [1]

## CASE REPORT

A 3-year-old brown child, previously healthy, completed vaccination schedule, was admitted to a Pediatric ward with a history of vesicular, pustular and maculopapular rashes, associated with fever peaks, malaise, tiredness and pruritus in facial region with six days of evolution. Twenty-four hours after the onset of symptoms, the patient developed an inflammatory process in the right eyeball region, associated with phlogistic signs. She was hospitalized, kept in isolation and started treatment with oxacillin, later associated with ceftriaxone to the regimen, treatment maintained for 10 days, with clinical improvement.

Laboratory tests for hemoglobin admission 13.3; hematocrit 27.1%; leukocytes 20,800; rods 1%; segmented 72%; lymphocytes 20%.

Orbital tomography showing eyelid edema and nonspecific soft tissue enlargement in the medial portion of the right preseptal space, with no apparent cystic foci.



Figure 1 Periorbital Cellulitis in child with chickenpox

## DISCUSSION

Primary varicella infection in children is generally a mild disease compared to more severe presentations in adults or immunocompromised patients of any age.

After the introduction of vaccine, the number of complications in children dramatically declined, although the most common complication has remained bacterial superinfections; in the Varicella Active Surveillance Project (VASP), complications included skin and soft tissue infections (42 percent), dehydration (11 percent), and neurologic complications (9 percent) [5].

Although vaccine attenuates disease manifestations substantially, complications can still occur. Primary varicella infection in children has been associated with an increased incidence of invasive group A streptococcal soft tissue infection [6,7]. Infectious complications have included cellulitis, myositis, necrotizing fasciitis, and toxic shock

syndrome [6,8]. The patient in the case developed a periorbital cellulitis complication, despite being vaccinated.

The periorbital cellulitis is an infection of the anterior portion of the eyelid, not involving the orbit or other ocular structures. Many cases of preseptal cellulitis arise from external sources. Based on the available data, the most common causes of preseptal cellulitis are *Staphylococcus aureus*, *Streptococcus pneumoniae*, other streptococci, and anaerobes [9,10], with the most likely pathogen(s) depending on the site of origin of the infection.

## CONCLUSION

Although considered a common benign disease of childhood, chickenpox can develop with complications, especially skin infections such as cellulite. In this case, secondary subcutaneous tissue infection occurs especially by group A beta-hemolytic *Streptococcus* and *Staphylococcus aureus*. In the case of periorbital cellulitis, the infection is restricted to the region anterior to the orbital septum, reaching the dermis and subcutaneous tissue of the eyelid. The clinic consists of local heat and edema, diffuse erythema, pain on palpation and inaccurate definition of healthy tissue in relation to the compromised one.

Although chickenpox vaccine is highly effective for preventing serious illness, about 1 in 10 vaccinated children may develop mild form of the disease after exposure to chickenpox.

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