MATHEWS

Mini Review

Mathews Journal of Pediatrics

Periorbital Cellulitis: An Educational Image and Mini-Review

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ABSTRACT

Periorbital cellulitis (Preseptal cellulitis) is inflammation of the eyelid and surrounding tissues, often resulting from bacterial infections. This condition typically presents with erythema, swelling, and mild ptosis without signs of orbital involvement, such as proptosis or ophthalmoplegia, which distinguishes it from orbital cellulitis. This report presents a case of periorbital cellulitis in a 6-year-old boy with a history of upper respiratory infection and no trauma. The child was successfully treated with azithromycin, given his suspected penicillin allergy. A review of the literature reveals various pathogens associated with periorbital cellulitis, with age and clinical context influencing the likely causative bacteria. Staphylococcus aureus remains a dominant pathogen, but Hemophilus influenzae is common in younger children, particularly those with concurrent upper respiratory infections. The case highlights the importance of clinical evaluation and appropriate antibiotic selection based on the patient's history and clinical presentation.

Keywords: Periorbital Cellulitis, Educational Article, Azithromycin.

INTRODUCTION

Periorbital cellulitis (also called preseptal cellulitis) is an inflammation of the eyelid and the skin and soft tissues around the eye anterior to the orbital septum, usually caused by a bacterial infection. It presents with erythema and swelling of the eyelid but no pain with eye movement, proptosis, or ophthalmoplegia; key differentiators from orbital cellulitis. Patients may have a history of upper respiratory infections, insect bites, or minor trauma (scratches). Diagnosis is primarily clinical, though blood cultures may be warranted if significant systemic symptoms are present. Most cases are managed with oral antibiotics, such as amoxicillin-clavulanate (if no allergy) or azithromycin [1-8].

PATIENTS AND METHODS

A 6-year-old boy presented with unilateral periorbital swelling, erythema, and mild ptosis in his right eye (Figure 1). His right upper eyelid appeared significantly swollen, partially obstructing the eye. The skin around the affected eye was red and mildly inflamed, but there were no visible signs of proptosis, ophthalmoplegia, or conjunctival chemosis, which would suggest orbital cellulitis. The child displayed a neutral facial expression and showed no obvious signs of distress or severe systemic illness. No trauma or obvious focus of infection was noted, but the patient had a recent history of upper respiratory infections.

Vol No: 10, Issue: 02

Received Date: July 21, 2025

Published Date: September 17, 2025

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Citation: Al-Mosawi AJ. (2025). Periorbital Cellulitis: An Educational Image and Mini-Review. Mathews J Pediatr. 10(2):44.

Figure 1. A boy with right periorbital swelling, erythema, and mild ptosis.

RESULTS

This clinical presentation is consistent with periorbital cellulitis, and there were no signs of orbital involvement. Given a possible penicillin allergy, the patient was treated successfully with Azithromycin 250 mg twice daily for five days.

DISCUSSION

Periorbital cellulitis was likely to be first described in the medical literature in the 1940s, with Hickman reporting four cases in 1948 [1].

In 1977, Robie and colleagues reviewed 67 patients with orbital cellulitis and 247 previously reported cases. They found that Staphylococcus aureus was the most common pathogen, except in children aged 3 months to 3 years, where Hemophilus influenzae and Diplococcus pneumoniae were more prevalent. Robie emphasized the frequent association of periorbital cellulitis with paranasal sinus involvement and orbital cellulitis [2].

In 1978, Gellady and colleagues reviewed 87 patients with orbital and periorbital cellulitis. Forty-five patients had no history of trauma or obvious focus of infection, with 34% of these cases showing positive blood cultures. Hemophilus influenzae accounted for 82% of positive blood cultures. Among the 42 patients with a soft tissue infection focus, Staphylococcus aureus and/or group A beta-hemolytic Streptococcus were commonly found in conjunctival or wound exudate. Thirteen of these patients had orbital cellulitis, often accompanied by sinus disease [3].

Smith and colleagues also reviewed 39 children with periorbital cellulitis in 1978, including two with orbital cellulitis. Thirty-seven of the patients had periorbital cellulitis, with two primary clinical presentations. Twenty-two patients had a history of local trauma, impetigo, insect bites, or abscesses, with Staphylococcus or Streptococcus identified as the most common causative organisms. The remaining 15 patients, mostly under the age of three, had associated upper respiratory infections or otitis, with Hemophilus influenzae being the most common pathogen. The authors recommended antibiotics targeting Hemophilus in children with periorbital cellulitis linked to respiratory infections [4].

In the 1980s and 1990s, amoxicillin-clavulanate increasingly became the treatment of choice for skin and soft tissue infections, including periorbital cellulitis [5,6].

During the 1990s, azithromycin has also been increasingly recommended in the treatment of skin and soft tissues infections [7,8].

In 1991, Kiani reported s study which showed that five-day treatment of skin and skin structure infections with azithromycin (500 mm for one day followed by 250 mg for four days) was as effective as treatment with cephalexin 500 mg twice daily for ten-days [7].

During the same year, Daniel reported a study which showed that azithromycin was as effective as, but has better tolerance

than, either cloxacillin or erythromycin in the treatment of infections of skin and soft tissues infections [8].

CONCLUSION

Periorbital cellulitis remains a common and often self-limiting infection in pediatric patients. Early recognition and differentiation from orbital cellulitis are crucial for appropriate management. Empiric antibiotic therapy should be chosen based on the patient's age, history of upper respiratory infections, and potential allergies. While Staphylococcus aureus is the predominant causative organism, Hemophilus influenzae should be considered, especially in younger children with concurrent respiratory infections. With prompt diagnosis and appropriate antibiotic therapy, most cases of periorbital cellulitis resolve without complications.

ACKNOWLEDGEMENTS

The father of the patient kindly consented to and encouraged the publication of his son's photo to contribute to advancing the understanding and treatment of periorbital cellulitis.

CONFLICT OF INTEREST

None.

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