Diagnosis at first glance: periorbital swelling and visual loss in an HIV-infected patient

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CASE STUDY

A 49-year-old HIV-infected man (category B2) was admitted to our hospital with periorbital swelling, fever and malaise. Six days before admittance he suffered mild left eyebrow trauma. Three days later he developed palpebral swelling and ocular pain and was transferred to the emergency room of our hospital, where he was diagnosed as having preseptal cellulitis with a normal paranasal sinus X-ray film. Treatment with oral amoxycillin–clavulanate was prescribed. The eyebrow wound was sutured but no visual evaluation was performed because the patient could not open the eye.

He returned to the emergency room due to worsening of his condition. Clinical examination revealed severe ocular pain associated with chemosis, proptosis, amaurosis and periorbital swelling (Figure 1). A head CT scan was performed.

Figure 1 Face of the patient on admission.

QUESTIONS

1. What is your clinical diagnosis?
2. What is the most common etiology of this syndrome?
3. What is the most probable microorganism in this patient?
4. What would be your therapeutic approach?

Figure 2 CT of the patient on admission.

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ANSWERS

Diagnosis: orbital cellulitis caused by *Streptococcus pyogenes*

The clinical diagnosis was orbital cellulitis (without abscess formation) and myositis**,** associated with anterior displacement of the ocular globe. Orbital cellulitis, also known as postseptal cellulitis, is an acute infection of the orbital contents. It is a serious infection because of the risk of visual loss and posterior spread affecting the cavernous sinus.

This infection is mostly caused by bacteria, and *Staphylococcus aureus*, *Streptococcus pyogenes* and *Streptococcus pneumoniae* are the most common. *Haemophilus influenzae* was the predominant pathogen until the introduction of extensive vaccination in the mid-1980s. In patients with underlying diseases, fungi can also be a cause. The most common predisposing factors are sinusitis, preseptal cellulitis and hematogenous spread. These mainly affect children between 4 and 9 years of age, whereas in adults trauma, puncture wounds and surgery are more frequently reported [1–5].

In the case reported here, the Gram stain of purulent material aspirated from the eyebrow showed Gram-positive cocci in chains. A rapid antigenic test for *Streptococcus pyogenes* performed on the purulent exudate was also positive. Cultures grew *Streptococcus pyogenes*. Neither mycobacteria, fungi nor other bacterial pathogens were isolated in cultures from the exudate.

Treatment of bacterial orbital cellulitis relies on prompt administration of intravenous antibiotics and surgical evaluation. Empirical therapy could be based on a third-generation cephalosporin (cefotaxime or ceftriaxone) with or without cloxacillin, or amoxycillin–clavulanate, until culture and susceptibility results are available. If resistance is suspected or the patient is allergic, vancomycin may be used. Surgical therapy is preferred in cases of orbital abscess. Surgery is not indicated if there is no identifiable purulent collection (except in severe sepsis which does not respond to medical therapy alone) or in the case of a subperiosteal abscess that seems to be responding to conservative measures [1–5]. Surgical treatment consists of external drainage, although in cases of subperiosteal abscess, endoscopy is an alternative [6].

Orbital cellulitis caused by *Streptococcus pyogenes* has some particular characteristics. It affects middle-aged persons with alcoholism or diabetes as common underlying diseases and trauma as portal of entry. Infection progresses rapidly, producing eyelid necrosis and, frequently, permanent visual loss caused by ophthalmic artery occlusions and/or optic nerve straightening (excessive elongation). Common complications include renal and respiratory failure, mental status deterioration and septic shock [7–9].

Penicillin is the drug of choice for *Streptococcus pyogenes* but clindamycin may be better in cases of extensive muscle involvement [10,11]. The use of normal pooled human immunoglobulins in cases of severe sepsis is promising [12,13]. Surgery is mandatory if there is abscess formation or if the patient is not responding to medical therapy alone. In cases of increased intraorbital pressure, the optic nerve may be damaged, leading to visual loss in a few hours. Lateral cantholysis may decompress the orbit but may also result in increased anterior globe displacement. Therefore, rapid posterior orbital decompression may be considered if tenting of the globe is detected [7].

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