Orbital Cellulitis

Background: the orbital septum

The orbital septum is a fibrous sheet that separates eyelids from orbital cavity contents. It is a continuation of the orbit periosteum & extends to the tarsal plates. Orbital cellulitis is uncommon but potentially life-threatening, characterised by infection of the soft tissues behind the orbital septum. Preseptal (peri-orbital) cellulitis is a much more common and less serious infection anterior to the orbital septum. Very occasionally, preseptal → orbital cellulitis.

Pathophysiology

Orbital cellulitis: Secondary to:

- infection in periorbital structures (usually paranasal sinuses), face, globe, lacrimal sac or dental infection (via maxillary sinus).
- direct inoculation from trauma (accidental or surgical)
- haematogenous spread from distant bacteremia.
- Occasionally, it may occur as an extension of preseptal cellulitis.

Pathogens usually - Strep. pneumoniae, Staph. aureus, Strep. pyogenes and H. influenzae.
Mucormycosis associated with DM or immunosuppression
Cx: spread to adjacent structures and CNS.

Preseptal cellulitis: Secondary to:

- local skin trauma such as lacerations and insect bites.
- spread from local infection such as dacrocystitis and paranasal sinuses.
- spread from distant infections or URT

Pathogens usually - Staph. aureus, Staph. epidermidis, the Strep species and anaerobes.

Epidemiology

More common in children: orbital cellulitis more often affects 7-12yo, preseptal younger.

Presentation

Examination	*Preseptal cellulitis*	*Orbital cellulitis*
Symptoms	• Unilateral • Tenderness, erythema and swelling of lids and periorbital area • May be a mild fever • Hx of sinusitis/mild local trauma	• Unilateral • Rapid onset of erythema and swelling • Severe pain assoc with blurred vision ± diplopia • Fever, headache, systemic malaise
Signs	• Erythema with tense oedema: may not be able to open lid • Tenderness • Normal visual acuity • Absence of: Proptosis, Restriction in ocular motility, Pain on eye movement, and Evidence of optic neuropathy	• Lid erythema and oedema ± ↓periorbital sensation • Pain • Usually ↓visual acuity • May be proptosis • Painful ophthalmoplegia • Evidence of optic neuropathy e.g. optic disc oedema
Additional notes	Eye itself may be slightly injected but is otherwise relatively uninvolved.	Other positive findings may include conjunctival chemosis and injection, a purulent discharge and evidence of endophthalmitis.

Investigations

Bloods: FBC, cultures, swab of wounds, CT
Imaging: CT orbits

Management

Preseptal cellulitis

Antibiotics:

- Mild-mod: **co-amoxiclav** 875/125mg (child 22.5/3.2mg/kg) PO bd x 7d ± **flucloxacillin** 500mg (12.5mg/kg) PO qid
- Mod-Sev: **cefotaxime** 1g (50mg/kg) IV q8h ± **flucloxacillin** 2g (50mg/kg) IV q6h
- **Flucloxacilllin** added if S.aureus likely - local trauma, or older child/adult.
- Ophthalmology review

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- IV antibiotics as for severe preseptal cellulitis
- Urgent ophthalmology review.
- Serial optic nerve function monitoring every 4 hours
- Treatment may be modified according to microbiology results.
- Surgery indicated where CT evidence of an orbital collection, failure to ABx, ↓↓acuity

Prognosis

CNS infection complication of orbital cellulitis is <2% but carries 50% mortality.

Prevention

Preseptal cellulitis

Prophylactic antibiotics if surgical and accidental trauma to the lid. Chloramphenicol ointment is a good first choice, applied qds to the clean wound for a week.

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Optimal treatment of any precipitating factors such as sinusitis.