Management of pre-septal and orbital cellulitis

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See also: Eye hospital referral guidelines

Background

For patients presenting with:
1. Ocular pain
2. Eyelid swelling
3. ± Periorbital erythema

It is critical to distinguish pre-septal cellulitis from the much more serious orbital cellulitis. If you are in any doubt, treat as orbital cellulitis.

Common organisms:
- Staphylococcus aureus*
- Streptococcus pyogenes*
- Pneumococcus
- Haemophilus influenzae *may be associated with trauma

Assessment

<table>
<thead>
<tr>
<th>Clinical feature</th>
<th>Pre-septal cellulitis</th>
<th>Orbital cellulitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>Sometimes</td>
<td>Usually</td>
</tr>
<tr>
<td>Eyelid swelling ± erythema</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Proptosis – look from above</td>
<td>No</td>
<td>Usually - often subtle</td>
</tr>
<tr>
<td>Chemosis</td>
<td>Rarely</td>
<td>Usually</td>
</tr>
<tr>
<td>Eye pain / tenderness</td>
<td>Sometimes</td>
<td>Yes - often deep eye pain</td>
</tr>
<tr>
<td>Painful eye movements</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Ophthalmoplegia</td>
<td>No</td>
<td>Usually</td>
</tr>
<tr>
<td>Relative afferent pupillary defect (RAPD) – check pupils</td>
<td>No</td>
<td>Possible</td>
</tr>
<tr>
<td>Visual impairment*</td>
<td>No</td>
<td>Late sign**</td>
</tr>
</tbody>
</table>

*Use Snellen chart or Ishihara colour vision chart
** May be preceded by a relative afferent pupillary defect (RAPD). Requires URGENT decompression of the orbit.
Decision pathway

Present?
- Proptosis
- Ophthalmoplegia
- Impaired visual acuity
- Relative afferent pupillary defect (RAPD)

Yes → Orbital Cellulitis

No → Pre-septal Cellulitis

Unsure → Urgent Ophthalmology review

Pre-septal Cellulitis

Also known as periorbital cellulitis. Infection of the soft tissues anterior to the orbital septum. Far more common than orbital cellulitis.

Causes:
- URTI
- Local trauma e.g. abrasion
- Lid infections e.g. cysts

Complications:
- Rarely can progress to orbital cellulitis

Management:
- Send bacterial swab from eye, throat, nose, and conjunctiva
- Add blood cultures if systemically unwell
- Start antibiotics (see below)
  Consider giving an initial I.V dose in CED even if discharging home on oral antibiotics

If mild, consider discharge home with oral antibiotics
- Advise to return immediately if the swelling worsens or the child becomes unwell
- Recommend that parents take daily photos of the eye with their camera phone

Consider admission for I.V antibiotics if:
- Unable to fully examine eye
- Less than 1 year of age / unable to cooperate with examination
- Systemically unwell
- Failure to improve after 24hrs of oral antibiotics
Antibiotics for pre-septal (periorbital) cellulitis:

**See BNFc for all doses**
I.V to oral switch when improving and tolerating oral antibiotics

### Mild infection:
- **Oral Co-amoxiclav** for 7 days
- Use “severe infection” doses

### Severe infection:
- **I.V Co-amoxiclav**
  - Review and revise by 72 hours.
- **Oral switch: Co-amoxiclav** to a total of 7 days
  - Use “severe infection” doses.

### Mild infection with penicillin allergy:
- Both IgE and non IgE:
- **Oral Clindamycin** for 7 days
- Use “severe infection” doses. Liquid dispensed on a named patient basis only – in first instance prescribe capsules to disperse in water/neat squash.

### Severe infection with penicillin allergy:
- **Non severe Penicillin allergy**, non IgE (i.e. delayed rash):
  - > 1 month: **I.V Ceftriaxone**
  - < 1 month: **I.V Cefotaxime** (consider ceftriaxone if > 37 weeks gestation and not jaundiced)
  - Review and revise by 72 hours.

- **Penicillin allergy**, IgE mediated (i.e. anaphylaxis):
  - **I.V Clindamycin**
  - Review and revise by 72 hours.

- **Oral switch for both: Clindamycin** to a total of 7 days / depending on clinical response.

### Orbital Cellulitis

Infection posterior to the orbital septum i.e. involving the contents of the orbit.
Can readily pass to the intracranial structures.

**Causes:**
- Rhinosinusitis
- Orbital trauma
- Ophthalmic surgery
- Dental, middle ear or facial infection

**Complications:**
- Loss of vision
- Abscess formation (brain, subperiosteal, orbital)
- Cavernous sinus thrombosis
- Meningitis and Septicaemia

**Indications for contrast-enhanced CT scan of the orbits and sinuses:**
- Proptosis
- Oedema extending beyond the eyelid margin
- Ophthalmoplegia / double vision
- Neutrophils > 10
- Involvement of other cranial nerves (III, IV, VI)
- No improvement after 24-48hrs of I.V antibiotics
- Painful eye movements
- Inability to fully examine the patient
- Reduced visual acuity
- RAPD
Management:

1. Analgesia
2. I.V access and bloods - FBC, CRP and blood cultures
3. Inform Ophthalmology
4. Consider CT scan – see box
5. Admit to ward for I.V antibiotics
6. ENT review if:
   - sinusitis suspected / confirmed on CT
   - no improvement after 24 - 48 hours of I.V antibiotics

Monitor vision / eye movement / pupils / temperature

Antibiotics for orbital cellulitis

**See BNFc for all doses**
I.V to oral switch when improving and tolerating oral antibiotics

I.V Ceftriaxone + I.V Metronidazole
<1 month old: I.V Cefotaxime + Metronidazole (consider ceftriaxone if > 37 weeks gestation and not jaundiced)

Review and revise by 72 hours.

**Oral switch: Co-amoxiclav** to a total of 7 days.
Use “severe infection” doses.

Penicillin allergy:

NON severe Penicillin allergy, non IgE (i.e. delayed rash):
I.V Ceftriaxone + I.V Metronidazole
< 1 month: I.V Cefotaxime + I.V Metronidazole (consider ceftriaxone if > 37 weeks gestation and not jaundiced)
Review and revise by 72 hours.

Penicillin allergy, IgE mediated (i.e. anaphylaxis):
I.V Clindamycin + I.V Ciprofloxacin.
Review and revise by 72 hours.

**Oral switch for both: Clindamycin + Ciprofloxacin** to a total of 7 days.

Discuss with Microbiology if no improvement after 24 – 48 hours of I.V Ceftriaxone