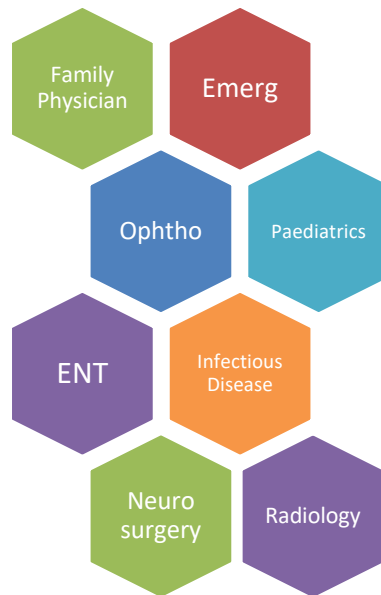


Preseptal Cellulitis & Orbital Cellulitis

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Orbital Cellulitis is a medical emergency which can be life-threatening. It requires management by a multidisciplinary team, each with a crucial role in the management.



Initial Presentation



Typical presentation involves erythema, swelling and increased temperature of the peri-orbital skin. The lid may be partially or full closed due to swelling. The patient may be generally unwell and may be pyrexial. In addition to basic ophthalmological assessment, it is critically important to ascertain at this stage:

- Is this Sepsis?
- Are there any other sources of infection?
- What is the neurological status of this child?
- What is the hydration status?

- Are there any other co-morbidities which need to be managed or which could affect the management of pre-septal cellulitis?
- Routine vital signs including temperature, heart rate, O2 sats and weight should be recorded.
- CBC, inflammatory markers, renal profile etc. should be performed if there is pyrexia or other evidence of sepsis.
- Are there symptoms of co-existing sinus disease (Congestion, pain)



Ophthalmological Assessment

Some features of the ophthalmology examination could be performed by an emergency physician or family physician such as:

- Is there peri-orbital redness/ swelling / increased temperature?
- Is there partial or complete lid closure (partial / complete ptosis)?
- Is the vision normal?
- Is there an RAPD (Relative Afferent pupillary defect)?
- Is the eye red?
- Is there obvious proptosis?
- Are eye movements normal?

A more comprehensive examination requires an ophthalmologist.



They will assess the above listed signs and also assess

- Is there any other condition of the eye leading to the lid signs such as conjunctivitis?

- Is there any other condition of the lids or lacrimal sac contributing to the disease?
- Are there **orbital signs**?
 - Exophthalmos (can be measured using an exophthalmometer in most cases)
 - Restricted eye movements
 - Displacement of the globe
 - Optic Nerve Compromise
- Is there optic nerve compromise?
 - Reduced Visual Acuity
 - Reduced Colour Vision
 - Relative Afferent Pupillary Defect
 - Optic Disc Swelling
- What is the intraocular pressure?
- Is there any vascular compromise of the retina?
- Is there evidence of Cavernous sinus thrombosis. (Suggested by hyperalgesia of CN V, Congested Retinal Veins, Optic Disc swelling, bilateral orbital signs).

Pre-Septal Cellulitis

The absence of orbital signs suggests that the infection is pre-septal. Pre-septal cellulitis can often be treated on oral antibiotics at home except if any of the following are present:

- Pyrexia / Sepsis
- Already on antibiotics and not improving or deteriorating after 48 hours
- Age <12months
- Immunocompromised
- Severe lid infection (i.e. complete ptosis with tense swelling)
- Parents/carers unable to manage treatment at home.

Patients who are suitable for treatment as an outpatient should initially be reviewed daily by ophthalmology and will require admission if there is deterioration. They may or may not require ENT input.

Antimicrobial Management of pre-septal cellulitis

Recommended antibiotics:

Non-penicillin Allergic:

Orally: Cephalexin or Co-Amoxiclav.

Intravenous: Cefazolin or Vancomycin

Penicillin Allergic:

Orally: Cefprozil or Clindamycin. Intravenous: Cefazolin or Vancomycin

Orbital Cellulitis

The presence of orbital signs indicates that orbital cellulitis is present when there is involvement of the tissues posterior to the orbital septum. Orbital cellulitis may be simple or complicated by:

- **Subperiosteal abscess**
- **Orbital abscess**

Orbital cellulitis can lead to

- **Extra-orbital Extension / Intracranial Extension**

Orbital Cellulitis requires admission, intravenous antibiotics and often requires imaging.

Antimicrobial Treatment of orbital cellulitis

Recommended antibiotics:

Non-penicillin Allergic:

Intravenous: Cefotaxime +/- Vancomycin +/-Metronidazole

Penicillin Allergic:

Intravenous: Cefotaxime +/- Vancomycin +/-Metronidazole

Imaging

CT imaging of the orbits and sinuses is often required to diagnose orbital abscess, subperiosteal abscess or extraorbital extension. This should be performed if there are orbital signs.

Scanning does use radiation and repeated scanning is undesirable. MRI scanning avoids radiation but is more time consuming, may require more sedation and does not show bony details as well. MRI may show cavernous sinus thrombosis better and so is indicated if there is evidence of cavernous sinus thrombosis.

In cases of pre-septal cellulitis imaging of the orbits and sinuses is rarely indicated.

Surgical Management

Surgical drainage is usually indicated if a collection is identified in the orbit. However medical management alone of subperiosteal abscess may be considered initially if:

- The patient is less than 9 year of age (has not reached 9th birthday)
- There is no frontal sinusitis
- There is a medial wall subperiosteal abscess alone
- The subperiosteal abscess is not very large
- There is no gas within the abscess or other reason to suspect anaerobes
- Previous surgery has not been performed
- There is no evidence of chronic sinusitis.
- The optic nerve and retina are not compromised
- The aetiology is not dental.

Cavernous Sinus Thrombosis

Many signs of orbital cellulitis overlap with signs of Cavernous sinus thrombosis. Hyperalgesia in the distribution of the Trigeminal Nerve, Retinal Venous Congestion and Optic disc swelling may suggest Cavernous Sinus Thrombosis and indicate MRI scan. Bilateral Orbital signs is highly suggestive of a large cavernous sinus Thrombosis.

The Neurology and Neurosurgery services should guide management of Cavernous Sinus Thrombosis.

Inpatient management

Patients who have been admitted with either pre-septal or orbital cellulitis require multidisciplinary input by Nursing Staff, Paediatricians, Ophthalmologists, ENT doctors, and are likely to also require involvement by Infectious Disease physicians.

- Patients should have inflammatory markers, cbc and blood cultures taken.
- Constant vigilance for evidence of Sepsis is required.
- Staying alert for evidence of infection elsewhere is important.
- Monitoring for changes in Neurological Status.
- Monitoring eye status to assess for improvement or deterioration.
- Monitoring for side-effects from antibiotics.

Cephalexin (Keflex)

Supplied: capsule: 250mg or 500mg, Suspension 50mg/ml

Children Dose (Severe Infections: 100 – 150 mg/kg/24hrs in 4 divided doses)max 4g/day

eg in 10kg child give 250mg – 375mg q6h = Cephalexin suspension(50mg/ml) 5ml to 7.5ml q6h

Clindamycin (Dalacin-C)

Supplied 150mg, 300mg capsule, oral liquid: 15mg/ml

Children dose: 10-30mg/kg/24hr po div q6-8h

Eg in 10kg child: give 25 - 75mg q6h = Clindamycin suspension (15mg/ml) 1.7ml to 5.0ml q6h

Cefazolin (Anacef) Intravenous

Children: 50—100mg/kg/24hr div q8h 9 (max 6g / 24hour)

Eg 10kg child: 167 to 334 mg iv q6h

Vancomycin (except neutropenic / renal failure patients)

Child: 60mg/kg/24hr div q6h

Eg 10kg child: 150mg iv q6h

Cefprozil (Cefzil)

Supplied: tablet 250mg/500mg, suspension 50mg/ml

Cefotaxime (Claforan) (except renal failure patients)

Child: 100-200mg/kg/24hr divided q8h

Eg 10kg child: 333mg – 666mg q8h iv

Metronidazole (Flagyl)

IV: 15-30mg/kg/24h divided q6-8h

Eg 10kg child: 50-100mg q6h