Orbital Disorders

Last updated: May 9, 2019

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(Peri)Orbital Cellulitis

orbital cellulitis - infection of orbital tissues (*posterior to* ***orbital septum****)*

periorbital (s. preseptal) cellulitis - infection of periorbital skin and eyelid (*anterior to* ***orbital septum****).*

Sources of infection:

1. **extension** from paranasal sinuses (ethmoid sinusitis – 90% cases!!!), teeth
2. introduced via **orbital trauma / surgery** (most commonly - S. aureus and S. pyogenes).
3. **hematogenous spread** from bacteremia (most commonly - Haemophilus influenzae type b, Streptococcus pneumoniae).

Symptoms & Signs

* primarily ***children*** (periorbital cellulitis < 5 yr of age, orbital cellulitis > 5 yr).
* > 90% unilateral.
* extreme orbital pain, **exophthalmos** (with painful resistance to globe retropulsion)\*, **painful ophthalmoplegia**\*, eyelid-conjunctival redness & swelling, decreased visual acuity\*, nasal discharge.

\*absent in periorbital cellulitis

Peri-orbital cellulitis caused by *Pseudomonas aeruginosa* (in acute myelogenous leukemia):



Acute infection of orbital tissue (esp. preseptal):



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**Mucormycosis** of orbit (uncontrolled diabetes mellitus, especially with ketoacidosis); potentially fatal fungal infection that involves nose, sinuses and orbit → proptosis, ophthalmoplegia, visual loss:



[Source of picture: “Online Journal of Ophthalmology” >>](http://www.atlasophthalmology.com/atlas/frontpage.jsf?locale=en)

* fever & malaise, *progressing rapidly to prostration*!
* complications:
1. **vision loss** (from optic neuritis, increased intraocular pressure, ischemia)
2. thrombophlebitis of orbital veins → **cavernous sinus thrombosis** (dilation of episcleral vessels is first sign!)
3. **panophthalmitis**
4. infection **spread to meninges / brain**.

N.B. orbital veins (drain from middle third of face, including paranasal sinuses) have no valves - allow infection passage both anterograde and retrograde!

Diagnosis

**X-ray** of sinuses, **CT** of orbit

**Blood cultures** (positive only in 33%)

*Needle aspiration of orbit is contraindicated*!

Indications for **CSF culture:**

1. infant < 1 yr with no external focus of infection
2. suspected spread to CNS

Treatment

* **antibiotics** i/v ASAP (e.g. cefuroxime, cephalexin, cefazolin, nafcillin).

in preantibiotic era mortality rate was 17% (20% of survivors were blind in affected eye!)

* if secondary to sinusitis – add nasal decongestants.
* if infection does not respond to antibiotics in 48-72 h or if suppuration is suspected → **incision & drainage**.

Exophthalmos (Proptosis)

- eyeball protrusion.

Etiology

1. **Orbital** inflammation, edema, infiltration (e.g. hyperthyroidism), tumors, injuries, hemorrhage, orbital pseudotumor (non-neoplastic cellular infiltration and proliferation, e.g. Wegener's granulomatosis), shallow orbits.
2. **Cavernous sinus thrombosis, carotic-cavernous fistula** (pulsating exophthalmos with orbital bruit).
3. **Eyeball enlargement** (e.g. congenital glaucoma, unilateral high myopia).
* causes of pseudoproptosis - lid retraction, unilateral high myopia, facial asymmetry, contralateral enophthalmos.

If orbital pressure is eccentric → eyeball deviation, diplopia.

Globe exposure can lead to *corneal drying, infection (exposure keratitis), ulceration*!!!

Diagnosis

**Hertel exophthalmometer** - formal measurement of position of anterior corneal surface in relation to lateral orbit wall.

* if proptosis is > 2 millimeters - **space-occupying orbit lesion** must be suspected.

Etiological diagnosis: CT / MRI of orbit, thyroid studies.

Treatment

Etiology determines therapy.

* cornea should be protected from exposure.
* surgical orbital decompression.

Bibliography for ch. “Ophthalmology” → follow this [link >>](http://www.neurosurgeryresident.net/Eye.%20Ophthalmology%5CEye.%20Bibliography.pdf)

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