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OCULAR DISEASE

ORBITAL CELLULITIS AND INTRAORBITAL ABSCESS



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INTRODUCTION

- Orbital cellulitis refers to **an acute infection of the soft tissues** of the orbit behind the **orbital septum**.
- Orbital cellulitis may or **may not progress** to a subperiosteal abscess or orbital abscess.



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Etiology

- Orbits may be infected by following modes:
 - ✓ **Exogenous infection**. It may result from **penetrating injury** especially when associated with **retention of intraorbital foreign body**, and following operations like **evisceration, enucleation, dacryocystectomy and orbitotomy**.



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- **Extension of infection from neighbouring structures.** These include *paranasal sinuses, teeth, face, lids, intracranial cavity and intraorbital structures.*
- It is the commonest mode of **orbital infections.**



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- **Endogenous infection.**
- It may rarely develop as metastatic infection from breast abscess, puerperal sepsis, thrombophlebitis of legs and septicaemia.
- **Causative organisms.** *Those commonly involved are: Streptococcus pneumoniae, Staphylococcus aureus, Streptococcus pyogenes and Haemophilus influenzae*



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Pathology

- I. Due to the **absence of a lymphatic system** the protective agents are limited to local phagocytic elements provided by the orbital reticular tissue
- II. **due to tight compartments**, the intraorbital pressure is raised which augments the virulence of infection causing early and extensive necrotic sloughing of the tissues



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- iii. as in most cases the infection spreads as **thrombophlebitis** from the **surrounding structures**, a rapid spread with extensive necrosis is the rule.



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Clinical features

- Symptoms include
 - ✓ **Swelling and severe pain** which is increased by movements of eye or pressure. Other associated symptoms may be
 - ✓ **Fever,**
 - ✓ **Nausea,**
 - ✓ **Vomiting,**
 - ✓ **Loss of vision.**



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Signs

- A marked *swelling of lids* characterised by *woody* hardness and redness.
- A marked *chemosis of conjunctiva*, which may protrude.
- The eyeball is *proptosed axially*.
- Frequently, there is mild to severe *restriction of the ocular movements*.
- *Fundus examination may show congestion of retinal veins and signs of papillitis or papilloedema.*



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**Orbital cellulitis in a three-year-old
female child**



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Complications

1. Ocular complications are usually blinding and include **exposure keratopathy, optic neuritis and central retinal artery occlusion.**



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i. Orbital complications

- *Subperiosteal abscess is collection of purulent material between the orbital bony wall and periosteum, most frequently located along the medial orbital wall.*



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- ii. *Orbital abscess* is collection of pus within the orbital soft tissue. Clinically it is suspected by signs of severe proptosis, marked chemosis, complete ophthalmoplegia, and pus points below the conjunctiva, but is confirmed by CT scan.



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- 3. Temporal or parotid abscesses** may occur due to spread of infection around the orbit.
- 4. Intracranial complications** include cavernous sinus thrombosis, meningitis and brain abscesses.
- 5. General septicemia or pyaemia** may occur eventually in few cases.



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Investigations

1. **Bacterial cultures** should be performed from nasal and conjunctival swabs and blood samples.
2. **Complete haemogram** may reveal leukocytosis.
3. **X-ray PNS** to identify associated sinusitis.
4. **Orbital ultrasonography** to detect intra-orbital abscess.



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- 5. *CT scan and MRI are useful:*
- in **differentiating** between **preseptal and postseptal cellulitis**;
- in detecting **subperiosteal abscesses and orbital abscesses**.
- in detecting **intracranial extension**;
- in deciding **when and from where to drain an orbital abscess**.



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Treatment

1. **Intensive antibiotic** therapy to overcome the infection. After obtaining nasal, conjunctival and blood culture samples, intravenous antibiotics should be administered.
 - **For staphylococcal infections** high doses of **penicillinase-resistant antibiotic** (e.g., oxacillin) combined with **ampicillin** should be given



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- To cover ***H. influenzae*** especially in children, **chloramphenicol** should also be added. **Cefotaxime, ciprofloxacin or vancomycin** may be used alternative to oxacillin and penicillin combination.
- 2. ***Analgesic and anti-inflammatory drugs are helpful in controlling pain and fever.***



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- *Surgical intervention. Its indications include unresponsiveness to antibiotics, decreasing vision and presence of an orbital or subperiosteal abscess.*



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- *Techniques*

- A free incision** should be made into the abscess when it points under the skin or conjunctiva.
- Subperiosteal abscess is drained by a **2-3 cm curved incision** in the upper medial aspect.
- In most cases it is necessary to drain both the **orbit as well as the infected paranasal sinuses**.