Complications of Sinusitis

**DEFINITION**

- A complication of rhinosinusitis may be defined as any adverse progression of chronic or acute bacterial infection beyond the paranasal sinuses, or compromise in function of any part of the body due to local or distant effects of the condition.

**CAUSES**

- Dental infections
- Toxic shock syndrome
- Associated Diseases include ➔ Otitis media, Adenotonsillitis, Bronchiectasis.
- Only Chronic complications include Mucoceles and mucopyoceles.

**ORBITAL CELLULITIS**

- Usually in young < 20 yrs
- Mild upper respiratory tract infection accompanied or followed by swelling around the eye.

**5 STAGES**:

1. Preseptal Cellulitis
2. Post septal cellulitis i.e. orbital cellulitis without abscess
3. Subperiosteal Abscess
4. Orbital Abscess
5. Cavernous sinus thrombosis

- According to **CHANDLER’S Classification of Orbital Involvement**
- Inflammatory Oedema ➔ Orbital Cellulitis ➔ Subperiosteal Abscess ➔ Orbital Abscess ➔ CST
- Third stage may present with Visual problems.
- If optic nerve function compromised then visual acuity and colour vision affected.
At stage five (cavernous sinus thrombosis), as well as chemosis, periorbital oedema and Proptosis, there will be a progressive ophthalmoplegia (lateral gaze may be affected first) and visual impairment (possibly resulting in total blindness).

Trigeminal paresthesias and headache may follow

Often bilateral especially Proptosis

Visual loss may be irreversible if retinal ischemic time exceeds 100 minutes.

OTHERS

Fever

SUPERIOR ORBITAL FISSURE SYNDROME ➔ Deep orbital pain + Frontal Headache + 3,4,6 nerve paralysis

ORBITAL APEX SYNDROME ➔ Superior Orbital Fissure syndrome + Involvement of Optic Nerve and/or maxillary division of trigeminal nerve.

MUCOCELE (describe all separately)

OSTEOMYELITIS:

Osteomyelitis is infection of bone marrow and should be differentiated from osteitis which is infection of the compact bone. Osteomyelitis, following sinus infection, involves either the maxilla or the frontal bone.

Osteomyelitis of the maxilla.

- It is more often seen in infants and children than adults because of the presence of spongy bone in the anterior wall of the maxilla.
- Infection may start in the dental sac and then spread to the maxilla, but less often, it is primary infection of the maxillary sinus.
- Clinical features are erythema, swelling of cheek, oedema of lower lid, purulent nasal discharge and fever.
- Subperiosteal abscess followed by fistulae may form in infraorbital region, alveolus or palate, or in zygoma.
- Sequestration of bone may occur.
- Treatment consists of large doses of antibiotics, drainage of any abscess and removal of the sequestra.
- Osteomyelitis of maxilla may cause damage to temporary or permanent tooth-buds, maldevelopment of maxilla, oroantral fistula, persistently draining sinus or epiphora.
- Frontal Osteomyelitis is k/a Potts puffy tumour.

INTRACRANIAL COMPLICATIONS:

- Young affected more may be due to high vascularity of Diploeic system at this age.
- Other features of various complications (described separately)
INVESTIGATIONS:

- In the case of orbital cellulitis, a formal assessment of the full range of eye movements, degree of proptosis, relative afferent pupillary defect, visual acuity (using a Snellen chart), colour vision (using Ishihara plates) and inspection of the optic disc should be made.
- For intracranial complications, clinical examination of the cranial nerves and central nervous system should be undertaken.

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- **Orbital complications** ➔ Investigation of choice is a high definition computed tomography (CT) scan taken in both coronal and axial planes.
- **Intracranial Complications** ➔ MRI scanning has been demonstrated to be superior to CT in the diagnosis of intracranial complications and is the investigation of choice.
- Culture of any purulent material found in the nose

TREATMENT

MEDICAL

- Unless an abscess is demonstrated by radiological or other investigation, nonsurgical management of rhinosinusitis complications would usually be the first choice.
- The exception to this would be when vision was affected by pressure on the optic nerve.
- Antimicrobials (intravenous cephalosporin with metronidazole would be an appropriate first choice.)
- Decongestants
- Systemic steroid administration is sometimes recommended to accelerate the resolution of the inflammatory process BUT the immunosuppressive action of the steroids may mask other complications of the infective process.
- If there is not a significant clinical improvement in the first 24 hours of medical treatment, surgical intervention should be considered.
For orbital complications, intravenous antibiotic administration should continue until clinical improvement is well established and only then should oral treatment be substituted.

With intracranial complications, a prolonged (four- to eight-week) course of intravenous antibiotics may be necessary.

**SURGICAL**

- For rhinosinusitis proper
- For complications

  *Contraindications for an endoscopic approach include any intracranial complication, osteomyelitis of the frontal bone or orbital complications with an acute visual problem.*

**ORBITAL CELLULITIS**

- Infections with cellulitis alone are likely to settle with conservative treatment, whereas patients with proptosis but normal eye movements and visual acuity are likely to require surgery
- Some surgeons suggest that endoscopic ethmoidectomy together with removal of the lamina papyracea and perinasal drainage of the orbital abscess is sufficient treatment.
- However, unless the surgeon is extremely familiar with endoscopic nasal surgery, it is probably easier and wiser to use an external approach.
- If an external approach is used, the conventional Lynch-Howarth approach for an external ethmoidectomy will allow the surgeon to drain the subperiosteal abscess 'on the way' to carrying out the definitive Ethmoidectomy

**INTRACRANIAL COMPLICATIONS**

- The surgical treatment of intracranial complications will inevitably involve neurosurgical expertise.
- It is probably better to undertake the surgery for the complication at the same time as undertaking surgical treatment for the underlying rhinosinusitis.