Topic: Preseptal & Orbital Cellilitis

Learning Objectives: Clinical Features and management of Preseptal and orbital cellulitis

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Orbital inflammatory diseases

- Cellulitis
  - Preseptal
  - Orbital
- Mucormycosis
- Idiopathic orbital inflammatory disease
- Myositis
- Dacryoadenitis
- Tolosa – Hunt Syndrome
- Wegener's granulomatosis

- Orbital cellulitis – an ophthalmic and medical emergency
- May cause loss of vision, even death
- Management under the combined care of:
  - ✓ Ophthalmologist
  - ✓ ENT Specialist
  - ✓ Pediatrician in children
  - ✓ Medical Specialist in adults and elderly

Preseptal cellulitis

- Not truly an orbital disease
- Much common than orbital cellulitis
- Commoner in children
- 80% cases under 10 years of age.

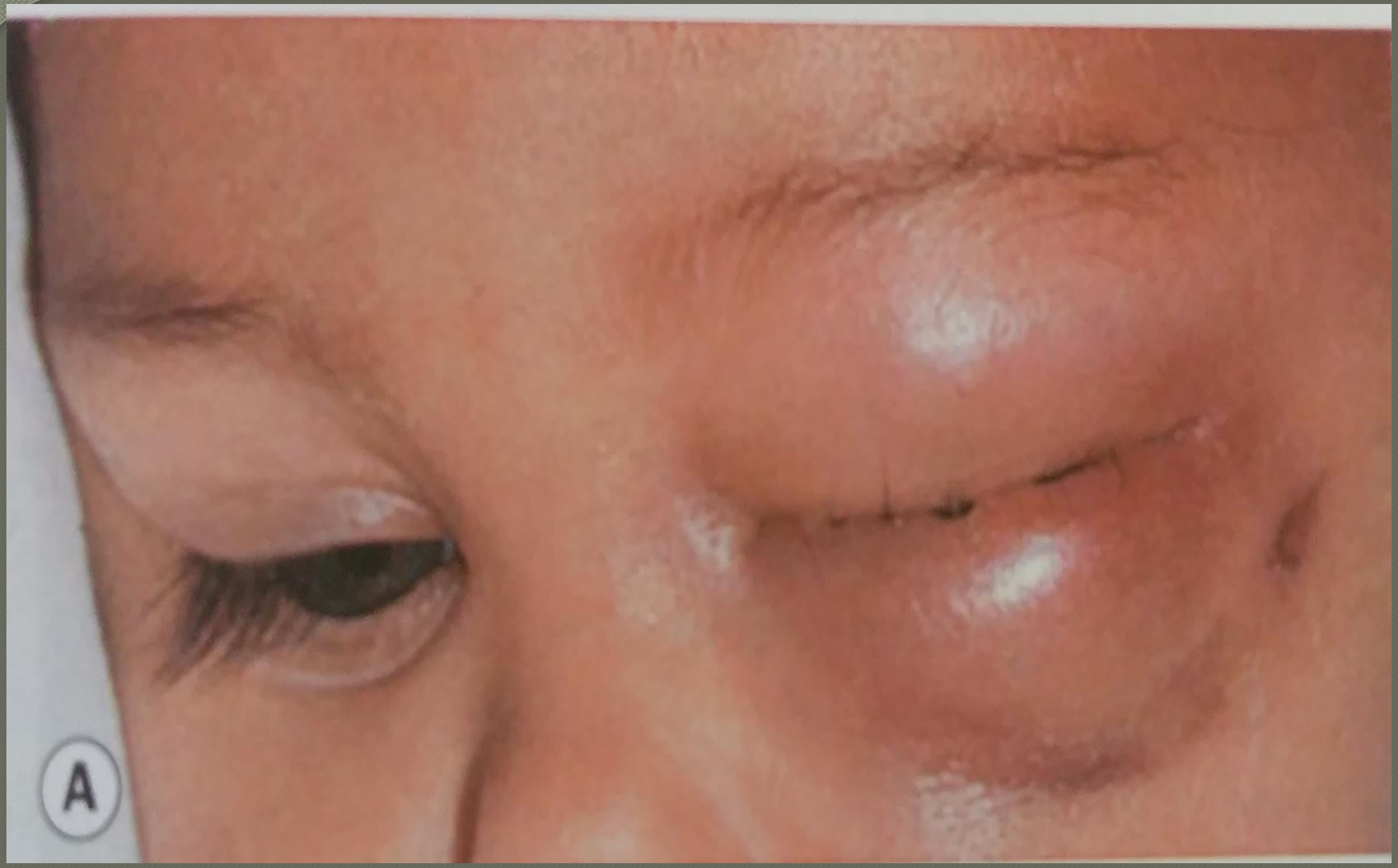
- Main causative organisms
  - Staphylococci
  - Streptococci
- Less severe disease, at least in adults and older children.
- In younger children, orbital septum not fully developed.
  - High risk of progression
  - Treated similarly to orbital cellulitis

Risk factors:

- Infection of adjacent structures
  - Dacryocystitis
  - Hordeolum
- Systemic infections
  - Upper respiratory tract infections
- Trauma
- Laceration

Clinical features:

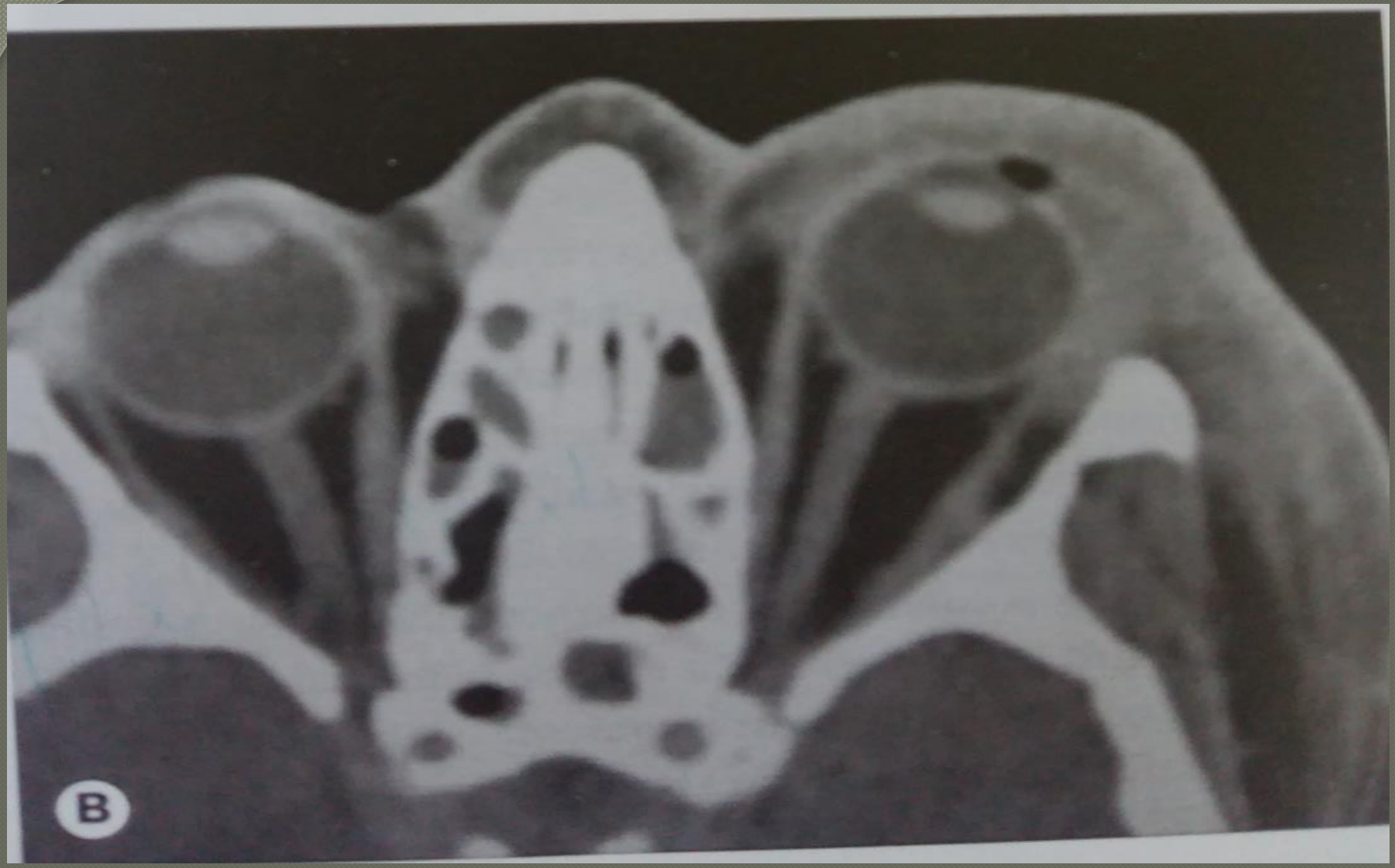
- Fever, malaise painful, swollen lid/periorbital inflamed lids.
- No proptosis, normal eye movements
- White conjunctiva, normal ON function.



Left preseptal cellulitis resulting from an infected eyelid abrasion

Investigations:

- Not usually required
- Needed when there is:
  - Orbital or sinus involvement
  - (opacification anterior to orbital septum)



Axial CT shows opacification anterior to the orbital septum

Treatment:

- Daily review until resolution
- Admit young or unwell children
- Treat with oral antibiotics (e.g. flucloxacillin 500mg 4x/d for 1 wk

Table - Orbital vs preseptal cellulitis

	Orbital	Preseptal
Proptosis	Present	Present
Ocular motility	Painful + restricted	Normal
VA	↓ (in severe cases)	Normal
Colour vision	↓ (in severe cases)	Normal
RAPD	Present (in severe cases)	Absent (i.e normal)

Orbital cellulitis

- Infective organisms include:
  - Streptococcus pneumoniae
  - Staphylococcus aureus
  - Streptococcus pyogenes
  - Haemophilus influenzae (common in children)

Risk factors:

- Sinuses disease
  - Ethmoidal sinusitis
  - Maxillary sinusitis
- Infection of adjacent structures
  - Preseptal
  - Facial
  - Dacryocystitis
  - Dental abscess

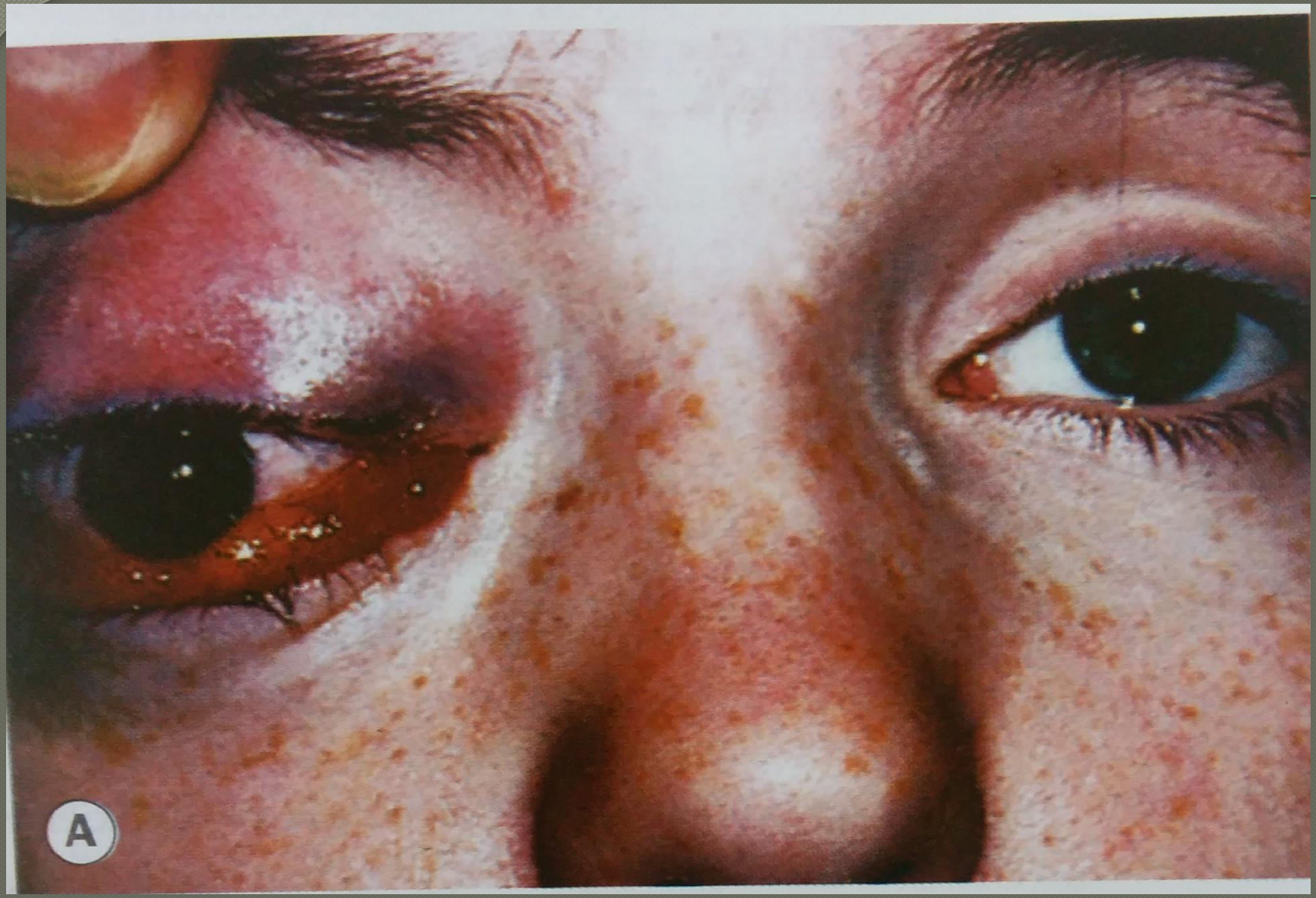
Trauma : Septal perforation
Retained FB

Surgical : Orbital
Lacrimal
VR Surgery

Endogenom spread: In immuno compromised patients

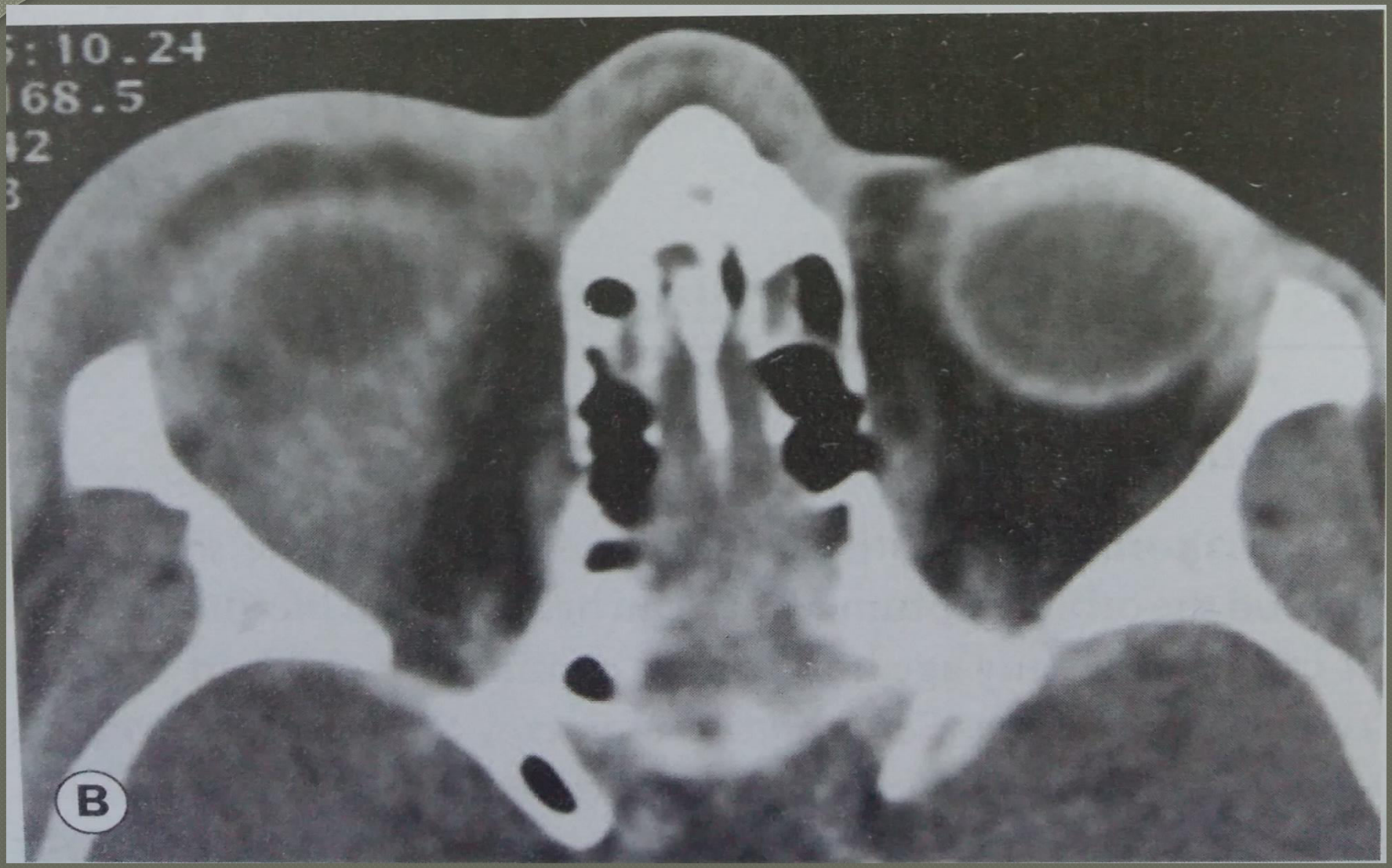
Clinical features:

- Fever, malaise and periocular pain
- Informal lids (swollen, red, tender, warm) ± chemosis, proptosis. Painful restricted eye movements, diplopia, lagophthalmos, optic nerve dysfunction (↓VA,↓colour Vision, RAPD)



Right orbital cellulitis with ophthalmoplegia

- Complications
  - Exposure keratopathy
  - ↑IOP, CRAO, CRVO
  - Inflammation of optic nerve
- Systemic
  - Orbital or paranasal abscess
  - Cavernous sinus thrombosis
  - Meningitis, cerebral abscess



Axial CT shows both preseptal and orbital opacification

Investigation:

- Temperature
- FBC, blood culture (but yield is low)
- CT (orbit, sinuses, brain)

  Orbital abscess

  Diffuse orbital infiltrate, proptosis ± sinus opacity

Treatment:

- Admit for IV antibiotics
- e.g either cefuroxime 750mg – 1.50g 3x/d or ceftriaxone 1 – 2g 2x/d with metranidazole 500mg 3x/d if history of chronic sinus disease
- Mark extent of skin inflammation to monitor status.

- Regular review orbital and visual functions
- ENT to assess for sinus drainage
- If any dereioration repeat CT to exclude abscess formation.

Mucormycosis

- Rare, very aggressive life threatening fungal infection
- Caused by Mucor syp or Rhizopus
- Disease of immunosuppressed
- Seen in patients who are acidotic such as in DKA or renal failure.

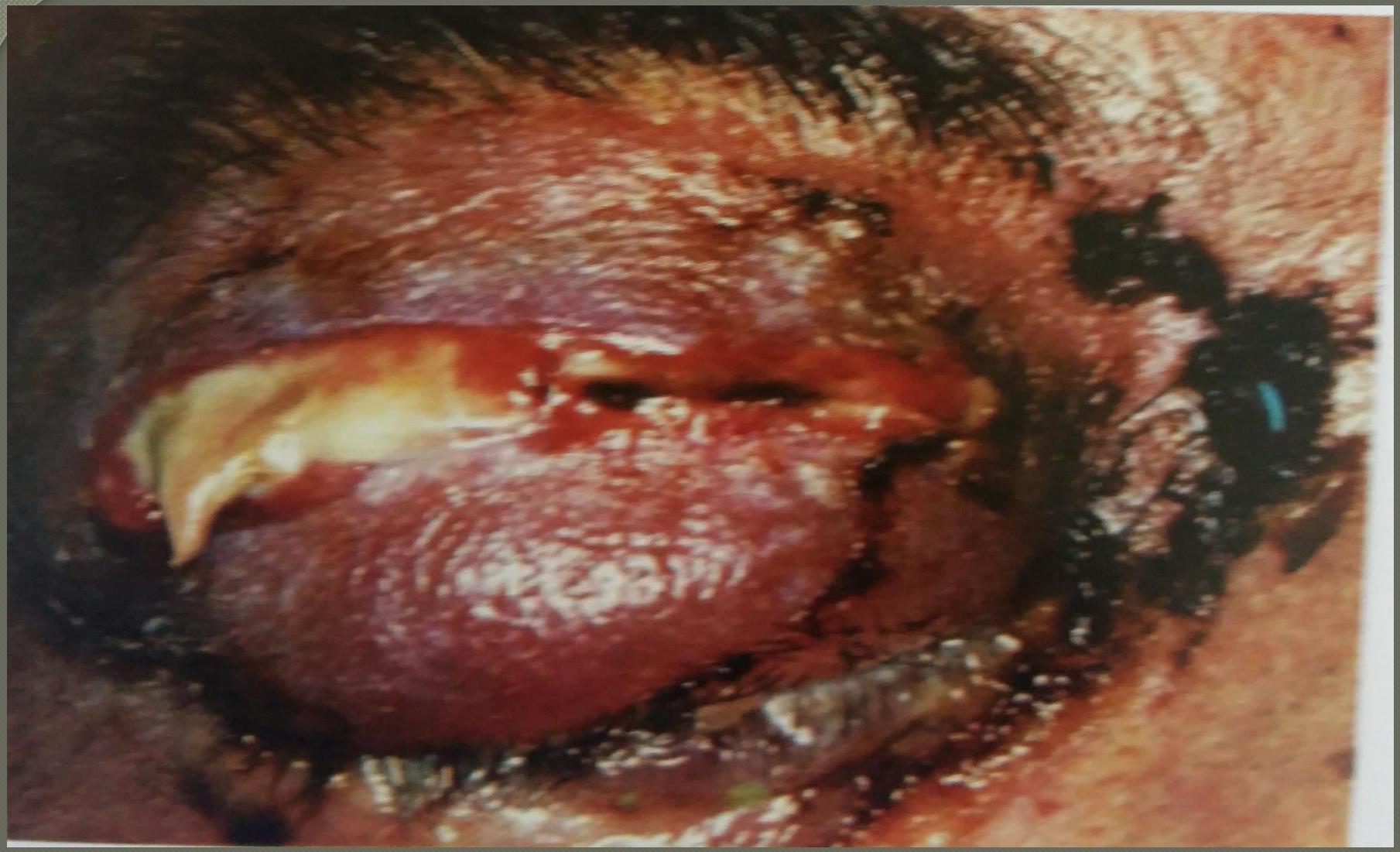
- Also occur in
  - Elderly
  - Malignancy
  - HIV/AIDS

- Immumosuppression
  e.g organ transplant recipients

- Represents fungal septic necrosis and infarction of tissues of nasopharynx and orbit.

Clinical features:

- Black crusty material in nasopharynx
- Acute evolving of eranial neive palsies (III, IV, V, VI, IIn)
- Obvious orbital inflammation.



Necrosis of the eyelid in rhino – orbital mucormycosis

Investigation:

Biopsy: Fungal stains show non septate branching hyphae

FBC : U + E, Glucose

Treatment:

Admit and coordinate care with

- Microbiologist
- Infectious disease Specialist
- ENT Specialist
- Physician

- Correct underlying disease e.g DKA
- IV antifungals (as guided by microbiology e.g high dose amphotericin
- Hyperbaric oxygen therapy
- Aggressive surgical debridement by
  - ENT specialist
  - Orbital exenteration (for unresponsive disease)

Idiopathic orbital inflammatory disease

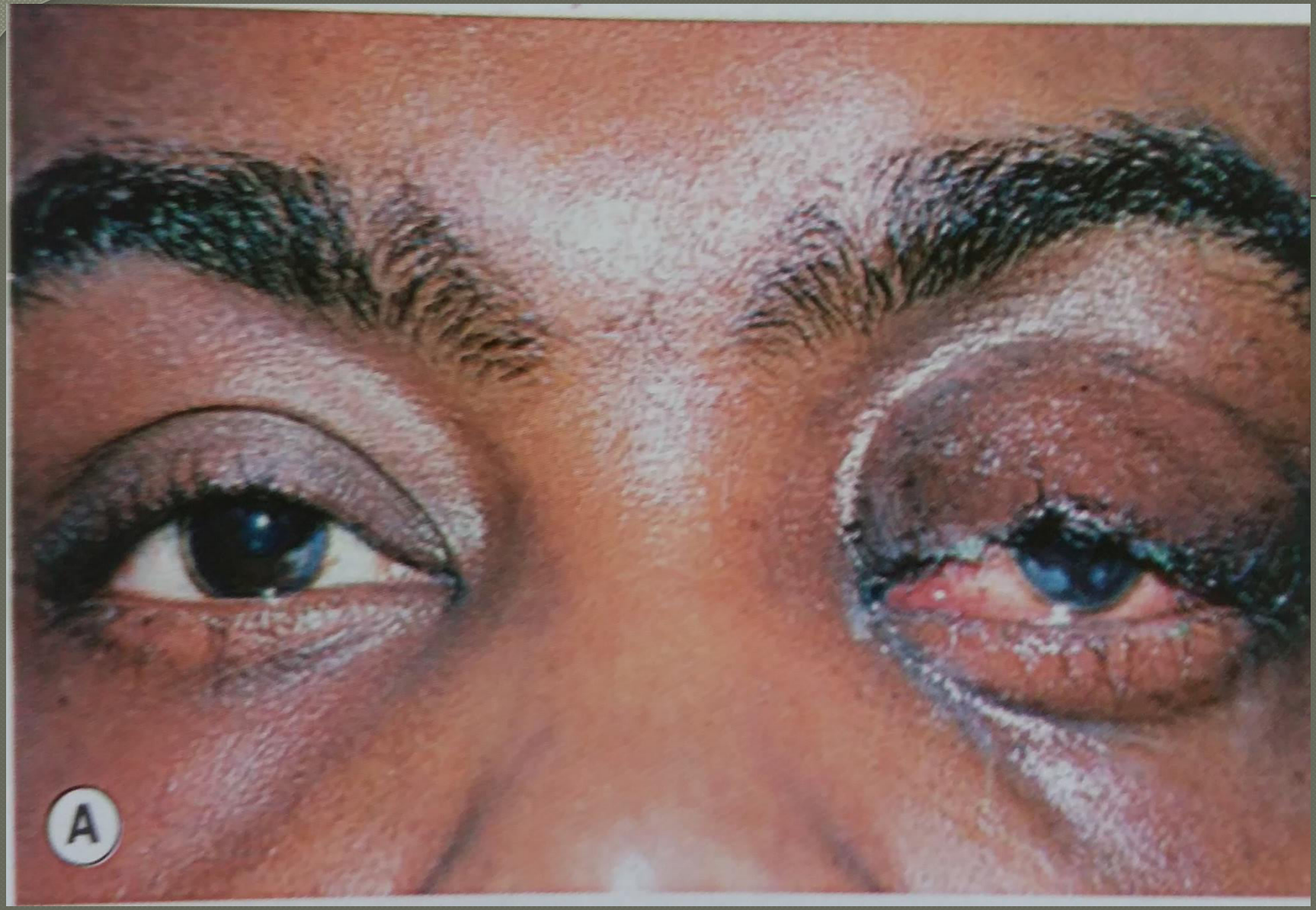
- Chronic inflammatory process of unknown aetiology.
- Inflammation may be predominantly
  - anterior orbit
  - Diffuse
- It may simulate a neoplastic mass.

Histology:

- Pure inflammatory response
- No cellular atypia
- Diagnosis of exclusion
- May represent a number of poorly understood entities
- Occur at any age, usually unilateral.

Clinical features:

Acute pain, redness, lid swelling, diplopia, conjunctival injection, chemosis, lid oedema, proptosis, restrictive myopathy, orbital mass.

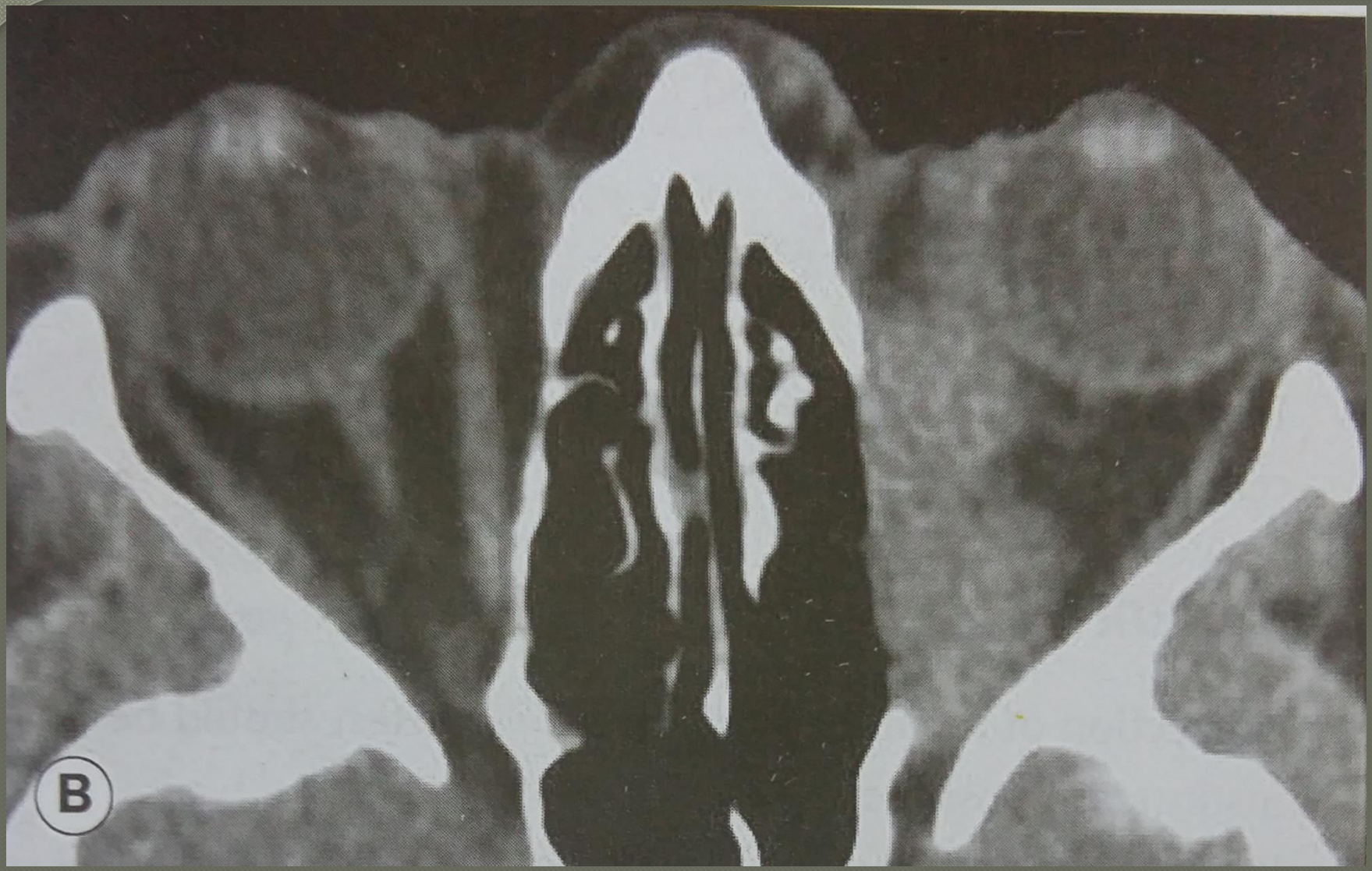


Left idiopathic orbital inflammatory disease

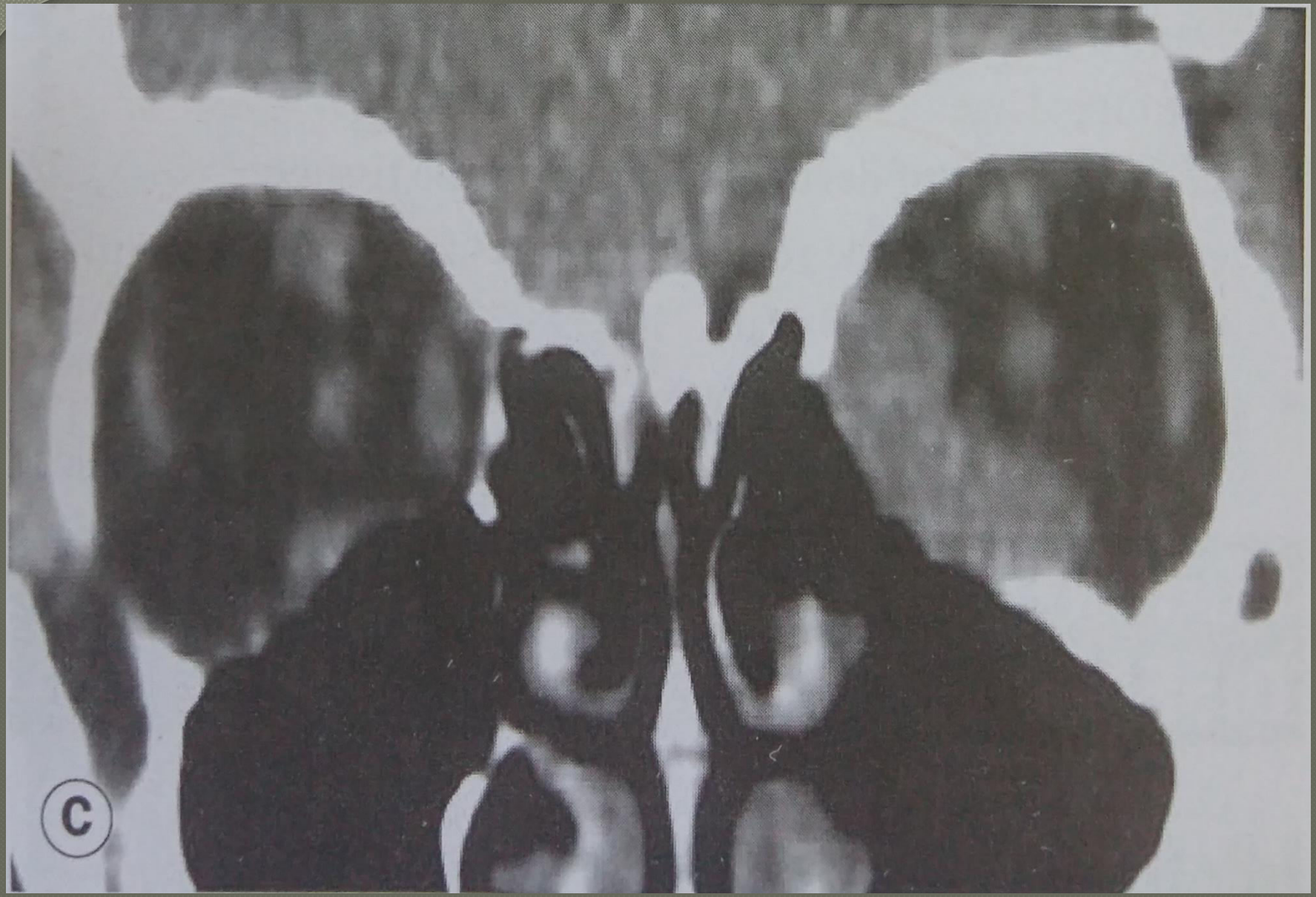
Investigations:

Orbital imaging

- B – Scan → low medium reflectivity
  acoustic homogeneity
- MRI → hypo intense-CF muscle on T1
  hypo intense-CF muscle on T2
- Biopsy → Required to confirm diagnosis



CT axial view shows ill – defined orbital opacification



Coronal view

Treatment:

Immumosuppression

- Usually systemic corticosteroids
- May need cytotoxics e.g
  - Cyclophosphamide
  - Radiotherapy

Differential Diagnosis:

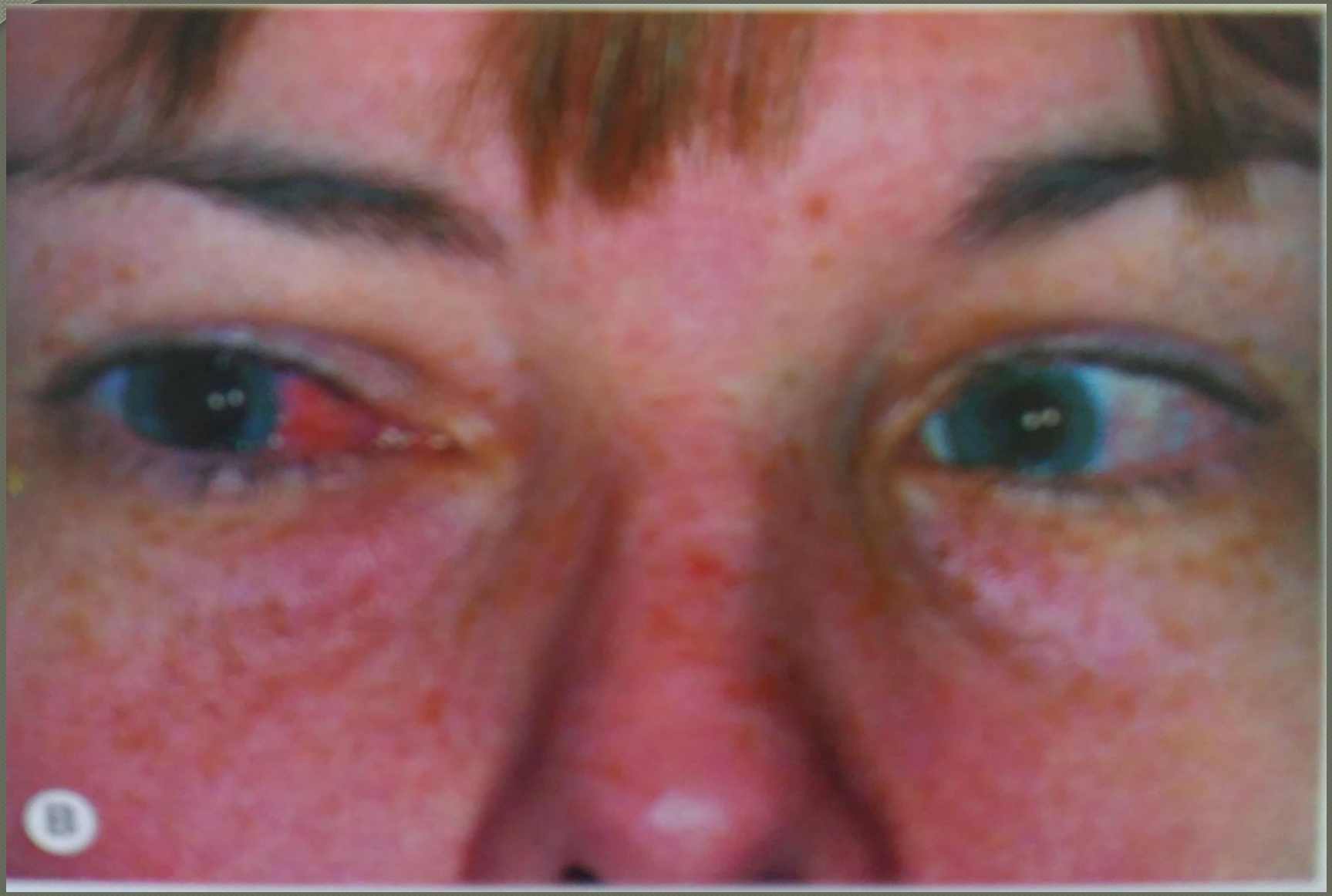
- Orbital cellulitis
- TED
- Wegener's granulomatosis
- Rhabdomyosarcoma
- Metastatic neuroblastoma
- Leukemic infiltration

Myositis

- Idiopathic inflammatory process
- Restricted to one or more extra ocular muscle superior or lateral
- Can occur at any stage
- Unilateral

Clinical features:

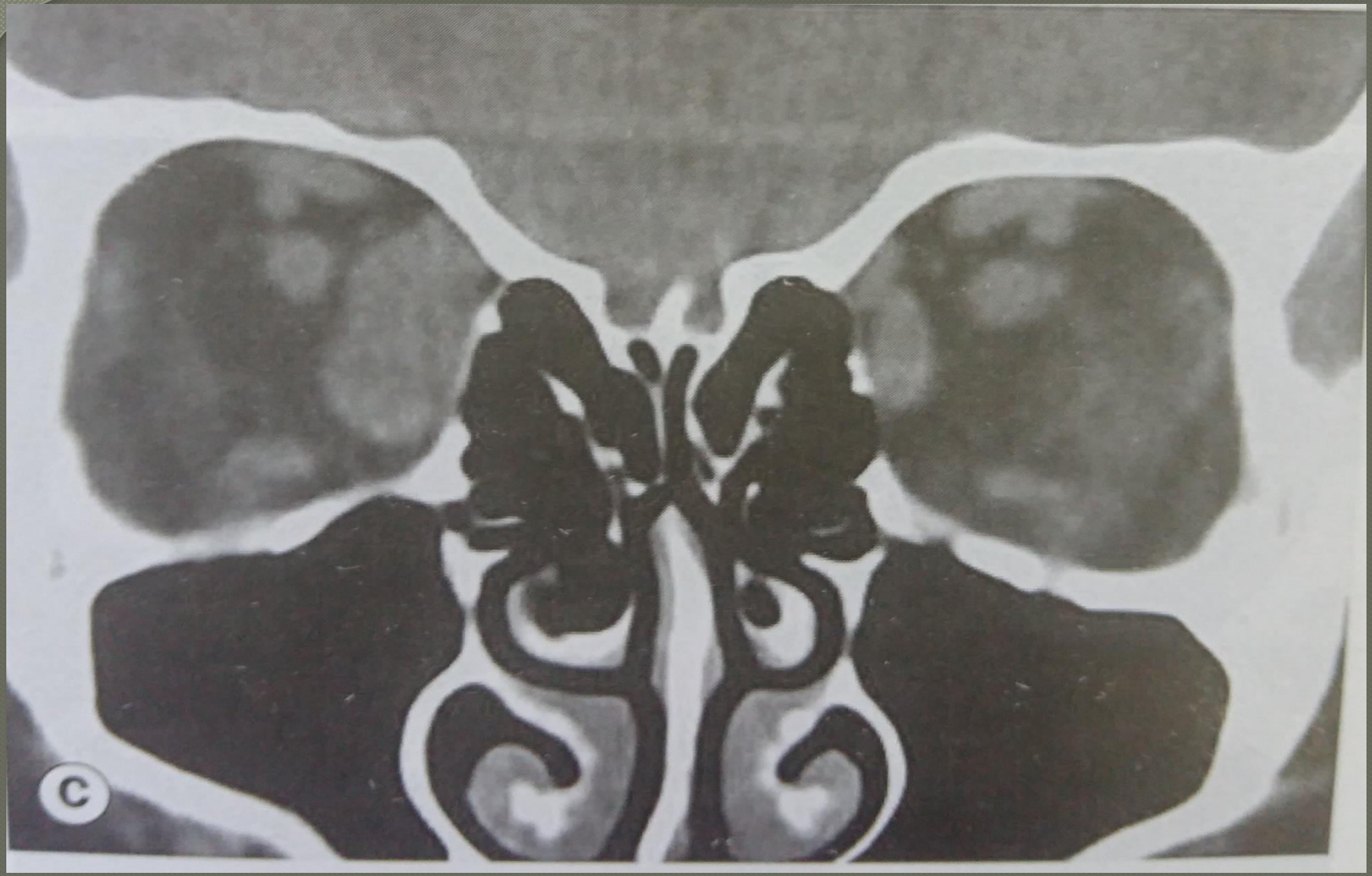
- Acute pain (on movement in direction of involved muscle.
- Injection over muscle
- Mild proptosis
- Repeated episodes – EOM fibrosis, squint



Vascular injection over the insertion of the right medial rectus

Investigations:

- Orbital imaging
  - CT Scan – show enlargement
  - MRI – better soft tissue resolution
- The whole of the muscle and tendon insertion – enlargement and inflammation.



Coronal CT shows enlargement of the right medial rectus

Treatment:

Immumosuppression:

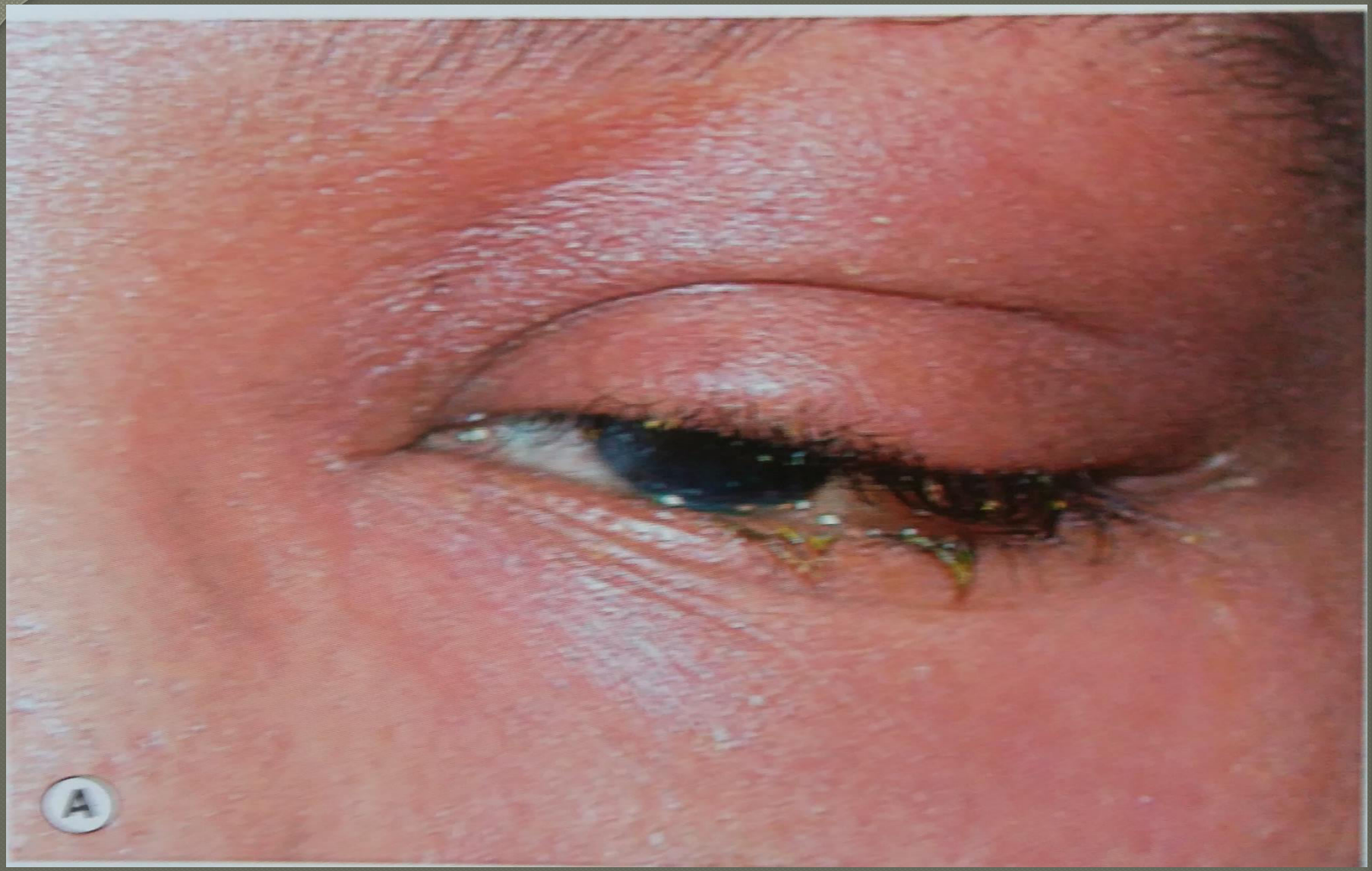
- very sensitive to systemic steroids
- Radiotherapy if recurrent / chronic or poor response to steroids.

Biopsy – if treatment responsive poor / Persistent symptoms

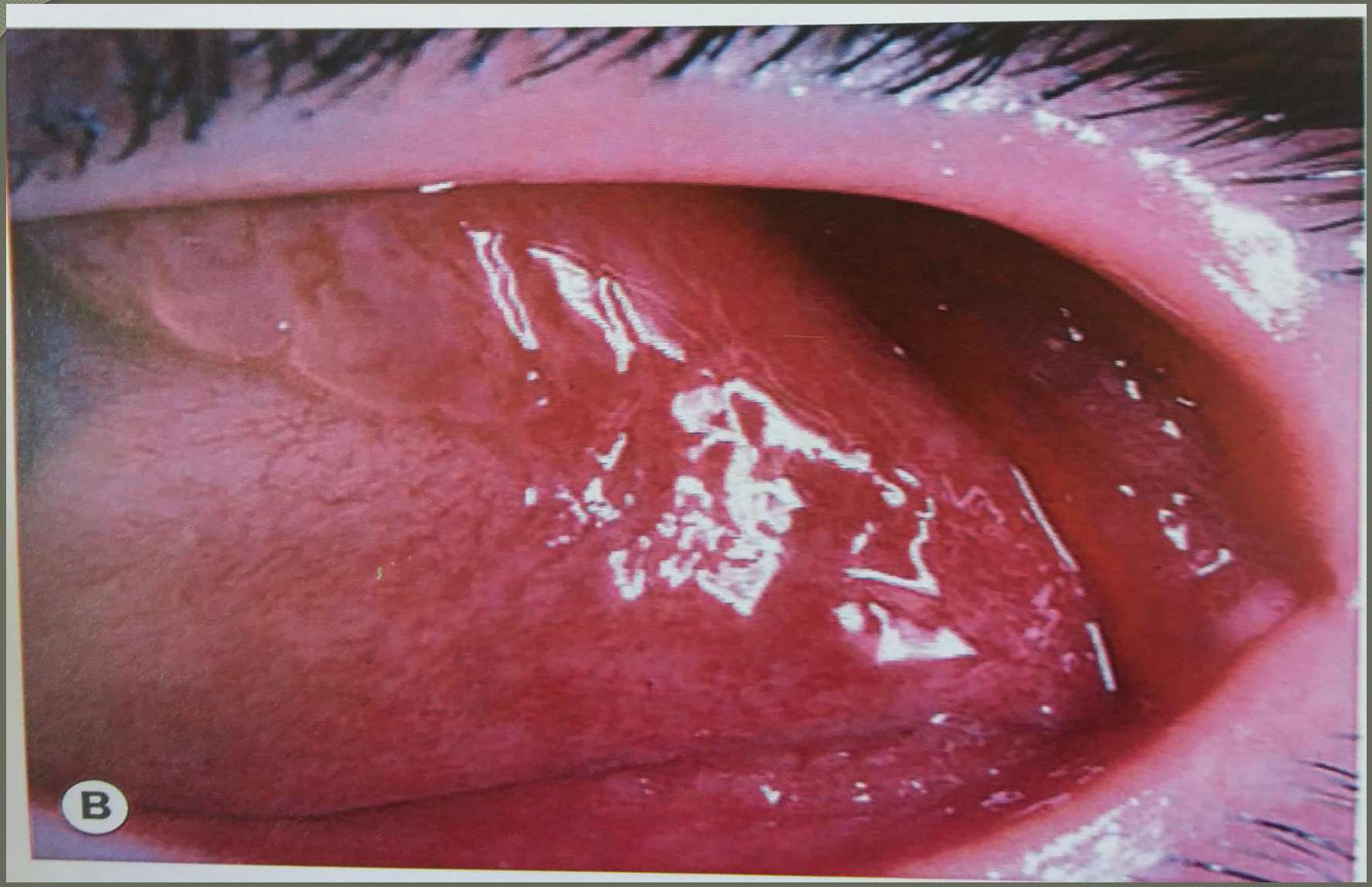
Dacroyoadenitis

- Lacrimal gland inflammation
- Isolated
- Occur as part of diffuse idiopathic orbital inflammatory disease.

- Presents with acutely painful swollen lacrimal gland – tender to palpation
- Has reduced tear production
- S – shaped deformity to the lid and upper lid causing ptosis.



Swelling on the lateral aspect of the eyelid and an S – shaped ptosis



Injection of the palpebral portion of the lacrimal gland and adjacent conjunctiva

Differential diagnosis:

- Infection – e.g Mumps, EBV, CMV
  Sarcoidosis, Sjogren's syndrome

- Isolated dacryoadentis – responds to
  oral NSAIDS (flurbiprofen 100mg3x/d
  oral steroids.

- Complete resolution – 3 months
- Orbital imaging & biopsy – indicated if inflammation persists.

Tolosa – Hunt syndrome

- Rare idiopathic condition
- Focal inflammation of superior orbital fissure ± orbital apex ± cavernous sinus involvement.

- Presents with orbital pain cranial nerve palsies, proptosis.
- Neuro – imaging required for diagnosis.
- Very sensitive to steroids.

Differential diagnosis:

- Other causes of superior orbital fissure syndrome.
  - GPA
  - CCF

- Cavernous sinus thrombosis
- GPA, Pituitary apoplexy
- Sarcoidosis, mucormycosis

Wegener's granulomatosis

- Uncommon, severe necrotizing granulomatosis vasculitis
- Have ophthalmic involvement in upto 50% of cases
- Orbital involvement in 22%
- Common in males and in middle age.

Clinical features:

Ophthalmic

- Orbital disease – Pain, proptosis
  Restricted myopathy
  Disc swelling, ↓ VA
- Other ocular disease – Episcleritis, scleritis, PUK, uveitis and Vasculits

Systemic:

- Preumonitis
- Glomerulonephritis
- Sinusitis
- Nasopharyngeal ulceration

Investigations:

- **ANCA** – Most cases- cANCA positive

- **CT Scan** – Obliteration of orbital fat planes by a plaque like infiltrative mass. Erosion and destruction of sinus and nasal bones.

Treatment:

Coordinated by Rheumatologist & Physician

Usually combined corticosteroids, cyclophosphamide or retuximab.

THANKS