Management of Bacterial CORNEAL ULCERS

This CME of the Jablapur Divisional Ophthalmic Society was held on the 18th of September 2005 at Hotel Krishna, the High Tea session was sponsored by Allergan India Ltd.

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Introduction

- Break in corneal integrity with underlying stromal infiltrate
- Significant cause of visual impairment
- Infection is mainly responsible in majority cases

Etiology

- Almost any organism can invade cornea if corneal defense mechanism compromised
- Lid abnormality
- Tear Film abnormalities
- Compromised corneal epithelium
- Developed countries- Viral infection
- Developing countries- Bacterial, Fungi, Acanthamoeba
- In a study - 71.9% culture positive
  - 63.9% - Bacterial , 2.1% - Parasitic
  - 33% - Fungal , 6.2% - Mixed infection

Organisms Profile

- Gram + cocci
  - Staph. Epidermidis (32.4%), Strept. Pneum(13.1%)
  - Staph. aureus(7.6%).
- Gram + Bacilli
  - Corynebacterium(13.9%)
- Gram - Bacilli
  - Pseudomonas(11.1%)
- Fungal
  - Aspergillus(33%), Furarium(35.1%)
- Parasite
  - Acanthamoeba

Probable Etiological Diagnosis

- No Distinctive sign to identify responsible organism
- Gram + cocci
  - Localized round & oval ulceration
  - Grayish white stromal infiltrate with distinct border
  - Minimal surrounding haze
- Gram - bacilli
  - Rapid inflammatory destructive course
  - Dense stromal suppuration
  - Hazy surrounding cornea with ground glass appearance
- Fungal Keratitis
  - Dry raised slough
  - Stromal infiltrate with feathery edge
  - Satellite lesion
  - Thick endothelial exudates
- Acanthamoeba
  - Epithelial irregularities, single or multiple
  - Stromal infiltrate
  - Classical ring shaped configuration
  - Severe pain & keratoneuritis

LAB Investigations

Routine systemic investigation

Smears (Staining)

- Conjunctiva, Sac – Gram + Geimsa,
- Corneal ulcer(from scraping) -- Gram, Geimsa, KOH, Methenamine silver stain, calcoflour white fluorescent dye
- Culture for Corneal ulcer [ protocol ]
- Lid margin – Bl Agar, En chocolate agar
- Conjunctivae – Bl Agar, En chocolate agar
- Sac – Bl Agar, Br Ht infusion
- Anaerobic – Thioglycato, CO2 media

Corneal ulcer (Scrappings)

- Moist swab culoette
- KIlimura spantula- Bl Agar, En chocolate agar, Sabouraud's media, Br Ht infusion

A study shows - Despite a tendency towards favorable results in culture positive corneal ulcers, the influence of detection of organism on their outcome has not been proved. The role of initial antibiotics therapy remain important.
Treatment

Local
Mono-therapy drops - Fluoroquinolones, Aminoglycosides, Tetracyclines, Chloramphenicol
Fortified antibiotics drops - Cephalosporins, Macrolides, glycopeptides, Lincomycin
Lubricating eye drops
Cycloplegics (Atropine)

Oral
Penicillins, Tetracyclins, Sulphonamides

Sub-conjunctival Injection
Aminoglycosides, Fluoroquinolones

Microbiological investigation always done in following-
Severe ulcer (rapidly progressing infiltrate >6 mm)
Involving deeper stoma
Associated with imminent or actual perforation
Cases with H/O & clin. Exam suggestive of unusual pathogen

Supplementary t/t -
Cycloplegic agents
Antiglaucoma agents
Oral analgesics

Surgical t/t
Debridement of necrotic debris
Tissue adhesives with bandage contact lens

Amniotic membrane graft

Conjunctival flap

Mucous membrane flaps

Lamellar & Penetrating keratoplasty
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<tr>
<th>ANTIBIOTICS IN OPHTHALMOLOGY (TOPICAL, SUB-CORNEAL, &amp; INTRAOCULAR THERAPY)</th>
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