

### CCLRU / LVPEI GUIDE

# DIFFERENTIAL DIAGNOSIS

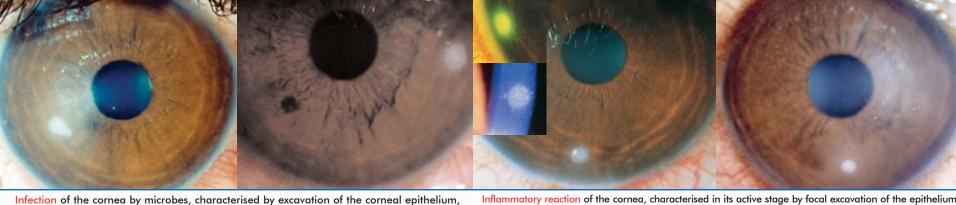
MICROBIAL KERATITIS

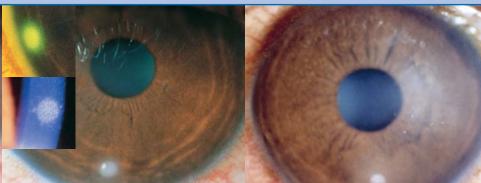
CONTACT LENS PERIPHERAL ULGER



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**Definition** 

Infection of the cornea by microbes, characterised by excavation of the corneal epithelium, Bowman's layer and stroma with infiltration and necrosis of the tissue.

infiltration and necrosis of the anterior stroma. Bowman's layer, however, is intact.<sup>2</sup>

Occurrence

Incidence of Microbial Keratitis (MK) in lens and non lens wearers is limited to few individuals per 10,000 wearers (4 to 5 events with daily wear; 20 to 21 with low DK extend-

Rare in non-lens wearers; 25 times more frequent with DW in comparison to MK; 50 times more frequent with extended wear in comparison to MK (CCLRU/LVPEI data)

**Symptoms** 

ed wear)3,

Ranges from moderate to severe pain, foreign body sensation, irritation to asymptomatic

Severe redness ('meaty' appearance) Moderate to severe redness Decreased visual acuity if the lesion is on the visual axis

Tearing

Signs

Discharge (mucopurulent), tearing

Photophobia

Puffiness of lids

Infiltrate size

> shape location

 depth surrounding cornea

overlying epithelium

· endothelial involvement Anterior chamber reaction

**Course & Management** 

Lid edema Bulbar and limbal redness

Unilateral / bilateral

Aetiology

**Risk Factors** 

• Commonly >1mm, can be multiple focal infiltrates

Any shape; commonly irregular

Moderate to severe pain of rapid onset

Mainly central or paracentral, sometimes peripheral

Anterior to mid-stroma, may involve entire depth

Involved, ranges from edema with diffuse infiltrates to satellite lesions or ring infiltrate

Full thickness loss (when active)

· Ranges from none to endothelial dusting with cells, keratic precipitates/plaques

Common, ranging from flare to hypopyon

Usual Severe

Usually unilateral

Usually small, single, circular, focal infiltrate (up to 2mm)

Circular, well-circumscribed

Peripheral or mid-peripheral

Anterior stroma (sub-epithelial) Diffuse infiltrates limited to anterior stroma

Full thickness loss (when active)

None

Only if severe; flare and cells

Rare Moderate, localised

Usually unilateral

Microbial invasion and infection (bacteria, fungus, parasites)5

Trauma8,9, poor contact lens hygiene9,10, overnight contact lens wear10,11, immunocompromised states12, swimming13

Immediately discontinue lens wear Progressively worsens without treatment

Corneal scrapings and antimicrobial therapy (e.g. fluoroquinolones) mandatory Monitor daily

Resolves with scar, may be vascularised, vision loss may occur

Toxins released by S.aureus colonising the contact lens surface6, bacteria not found on scraping or biopsy7

Overnight contact lens wear, lens material interaction with corneal surface

Discontinue lens wear until resolution

Normally heals rapidly without intervention

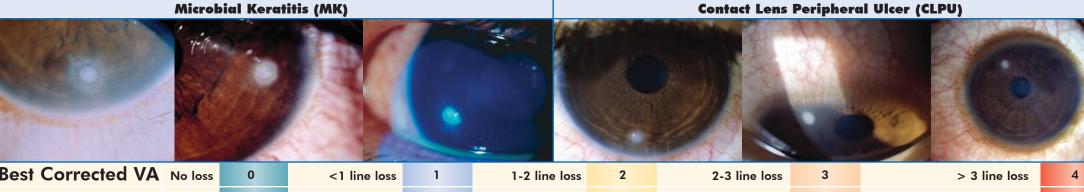
Close monitoring required (eg. within 24hrs on Day1)

Antibiotics (if monitoring not possible)

Resolves with scar ('bullseye' appearance)

CIRCLE & WIPE (with marker pen)

For each variable listed on the left, choose and circle the appropriate score from the grades across the page, ranging from green to red. Add the circled scores together to calculate the final score, and refer to probability index to guide your diagnosis.



### Best Corrected VA No loss Ocular Adnexa **Conjunctival Redness** 2 quadrants 3 quadrants 2 3 None 0 1 quadrant 1 4 quadrants Chemosis None **Present** 3 0 2 Discharge None 4 0 Watering Mucopurulent Slight 1 2 3 Severe Lid edema None 0 **Very Slight** Moderate Infiltrate 0.5-1.0 3 Size (mm) 0 < 0.5 2 1.1-2.0 >2.0 Shape 2 0 Round Irregular 4 Mid-peripheral > 2 quadrants /Satellite lesions Location 0 **Peripheral** 2 Central 3 Depth 0 **Anterior stroma** Mid-stroma **Entire stroma** 3 1 All layers 4 Overlying epithelial staining **Epithelial defect** Intact 0 **Punctate** 1 4 **Anterior Chamber** Ant.chamber/endothelium 0 Flare/Cells Keratic precipitates/Plaque/ **Endothelial dusting** 3 None 4 Hypopyon Score 0

### **Probability index for MK**

- >25 - High probability of MK; needs urgent medical attention; corneal scrape and therapy mandatory
- Possible early MK or severe CLPU; refer immediately for 15 - 25 medical attention
- <15 - Low probability of MK; monitor at frequent intervals over 24 hours; if condition stable or improving, continue frequent follow ups; if condition worsens, refer for medical attention immediately.
- Note: For all events discontinue lens wear and do not patch the eye. Save lens case/ solutions for microbiological analysis.

### References:

- Cokington CD, Hyndiuk RA. Bocterial Keratitis. In Infections of the Eye. 2nd Edition. Little, Brown & Co., USA, 1996. Holden BA, Reddy MK, Sankaridurg PR, Buddi R, Sharma S, Willos MDP, Sweeney DF, Roo GN. Contact lens induc Histopathological observations on the nature and type of comed infiltrate. Corneo, 18(9), 538-543, 1999. Poggio EC, Glyma RJ, Schein OD, Seddon JM, Shannon MJ, Scardino VA, Kenyan KR. The incidence of Ulterative Kr.

= Total

- Cheng KH, Leung SL, Hoexman HN, Beekhuis WH, Mulder PG, Geerads AJ, Kijlstra A. Incidence of contact lens associated microbial keratitis and its related morbility. Lancet. 354(9174), 181-185,199
- Cheng KH, Leung SL, Hosaman HN, Beekhnis WH, Mudder PG, Geerada AJ, Kijiktra A. Incidence of contact lens associated microbial keratinis and its related morbility. Lancet. 354(9)174), 181-185,195
  OBine IJP, Green WK, Kerattis, In Principles and Precince of Infectious Disease, Mandell CL et al., eds. 4th Edition, Churchill biringstone, New York, 1995.
  Willcox MDP, Sweeney DF, Sharma S, Gopinathan U, Sankaridurg PR, Ramachandran I, Holden BA, Roo GN. Culture negative peripheral ulcars are associated with bacterial contamination of contact I Grant T, Chong MS, Vajicit C, Swerbrick HA, Gauthier C, Sweeney DF, Holden BA. Contact lens induced peripheral ulcars (CIPUs) during hydrogel contact lens wear. CLAD J, 24(3), 145-151, 1998.
  Sweeney DF, Terry R, Papas E, Austin R, Evans V, Jalbert I, Holden BA. The prevalence of "infiltrates" in a non-contact lens wearing population. Invest Ophthalmol Vis Sci, 37, 71, 1996.
  Ramphal R, McNiece MT, Polack R. Adherence of Pseudomonas acregious to the injured cornea. A step in the partiageness of corneal infections. Ann Ophthalmol, 13, 421-425, 1981.
  Wilson LA, Schlitzer RL, Ahearn DG. Pseudomonas corneal ulcers associated with soft contact lens wear. Am J Ophthalmol, 92, 546-554, 1981.
- Weissman BA, Mondino BJ, Pettit TH, Hofbauer JO. Corneal ulcers associated with extended wear soft contact lenses. Am J Ophthalmol, 97, 476, 1984.
- Nanda M, Pflugfelder SC, Holland S. Fulminant Pseudomonda M, Pflugfelder SC, Holland S. Fulminant Pseudomondaudgal PC. Acanthamoeba Keratifis: report of three cases ioeba Keratitis: report of three cases. Bull Soc Belge Ophthalmol, 231,135-148-1989

## Acknowledgements:

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