Two-minute guide to MK and CLPU

Andrew Elder Smith continues his quick reference guide to symptoms, signs, cause and management of common conditions

Microbial keratitis (MK) is the only serious, sight-threatening adverse effect of contact lens wear. Contact lens peripheral ulcer (CLPU) is less serious and non sight-threatening. Differentiating between them is not straightforward. The golden rule must be: **if in doubt assume MK**. Statistically MK will affect about one in 2,500 wearers a year but only 10 per cent of these will lose VA due to corneal scarring, a rate similar to refractive surgery.

How do I see it?

With a slit lamp, low intensity illumination, a broad beam or diffuser and low to medium magnification (10 to 16X). There will be a grey subepithelial infiltrate. Use optic section to see corneal thinning. The area of infiltrate will be larger than the loss of substance.

In CLPU the infiltrate will be circular, <1mm in diameter. In MK the infiltrate may be irregular, >1mm diameter. Both stain with sodium fluorescein, which will penetrate the stroma. Use a narrow, short beam and moderate magnification to check for flare and cells in the anterior chamber (easier to see in a fully darkened room against black of pupil) appearing as haziness or bright specks floating in the aqueous.

Symptoms

First symptoms usually reported:

- Discomfort
- Foreign body sensation
- Itching
- Pain.

Less common first symptoms:

- Photophobia
- Tearing/discharge
- Redness
- Lid swelling
- Blurred vision.

Sufferers may report some or all.

In CLPU the symptoms should **improve** soon after the lens is removed. In MK the symptoms worsen on lens removal.

Signs

CPLU

- Peripheral infiltrate with loss of corneal substance and staining
- Usually <1mm
- Circular
- No or minimal anterior chamber reaction.

MK

- Infiltrate, **anywhere** on cornea with loss of substance and staining
- Usually >1mm
- Circular or irregular
- Anterior chamber reaction.

Causes

- Immune response to the presence of microbes in close contact with the corneal tissues
- 'Microbial' or 'sterile'? Negative culture could mean micro-organisms were present but have not been collected or failed to multiply in culture
- The source of micro-organisms likely to be lens surfaces
- CLPU may be immune response to toxins secreted by microbes, MK from invasion of tissue
- History of minor eye trauma or lid disease not essential.

Risk of MK and CLPU is increased by:

- Upper respiratory tract infection (coughs, colds etc)
- Thyroid disease (systemic)
- Poor compliance
- Poor hygiene – hands, lenses, solutions and cases
- Younger age
- Males
- Low socio-economic group
- Sleeping in lenses.

Microbial keratitis

Peripheral ulcer (image courtesy of SJ Morgan)

Management

CLPU usually resolves spontaneously, leaving a small, circular scar at Bowman's layer with no impact on vision. Assume CLPU if:

- Symptoms improve soon after lens removal
- Infiltrate, staining, peripheral and <1mm across
- No AC reaction
- Vision not blurred.

Removing lenses improves tear flow over cornea, allowing natural ocular anti-microbials to irrigate lesion. Symptoms will begin to improve unless immune system overloaded. Some practitioners will not use anti-microbial or anti-inflammatory medications, others may prefer to use prophylactic anti-microbial.

Review after 2-4 hours. If no better, commence treatment with appropriate anti-microbial(s). If the symptoms **worsen** at any time then treat as a case of MK.

MK has serious consequences if not treated promptly – loss of VA more likely if treatment delayed more than 12 hours. Assume MK if:

- Pain continues or worsens after lens removed
- Central staining infiltrate with symptoms
- Staining infiltrate >1mm in any location especially when:
  - AC reaction
  - Photophobia that does not improve on lens removal
  - Blurred vision
  - Watering, with/without discharge
  - Lid swelling.

Arrange emergency treatment with anti-microbial therapy. Wearers should take lenses, cases and solutions for culturing to identify micro-organism.

Prognosis

CLPU will resolve with no effect on vision, leaving small peripheral scar. In MK, vision depends on location and depth of scar and corneal irregularity. If severe may need graft. Once resolved no problem returning to contact lens wear – provided practitioner and wearer can agree a wearing pattern that will minimise future risk.

- If MK, no more extended wear (EW)
- If one episode of CLPU in EW, can return to EW cautiously, stressing remove lenses if fail 'Look good, Feel good, See good' test at any time. Monitor closely
- Further CLPU or infiltrative keratitis then daily wear only
- Stress importance of all aspects of hygiene, hands, lids, case, solutions and lenses
- Change lenses regularly
- MK seems to be less severe with silicone hydrogel and daily disposable lenses
- Promote regular follow-up and get wearer to demonstrate care regime
- Consider RGP lenses especially if cornea irregular.

Differential diagnosis

Corneal abrasion, penetrating foreign body, non-CL related ulcer eg Herpes, Mooren's.

● Optometrist **Andrew Elder Smith** runs Contact Solutions Consultants which offers in-practice training to team members from optometrists to front of house