Acanthamoeba keratitis: How not to miss the diagnosis

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Auckland

<table>
<thead>
<tr>
<th>2001 - 2008</th>
<th>2009 - 2016</th>
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<tbody>
<tr>
<td>41 days</td>
<td>14 days</td>
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<tr>
<td>6/24</td>
<td>6/12</td>
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<td>24%</td>
<td>7%</td>
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The great Masquerade

Early cases
- Epithelial herpetic keratitis
- Healing corneal abrasion/recurrent erosion
- Neurotrophic keratopathy
- Toxic epitheliopathy

Late cases
- Stromal herpetic keratitis
- Fungal keratitis

Asking the right questions

- History is key
- 70-90% of diagnoses made by history alone
- Contact lens wear: type, duration, cleaning system
- Water exposure: hot tub, swimming pool, river, water tank
- Ocular trauma
- Cold sores
- Shingles
- Previous episodes
- Diabetes Mellitus
- Eye drops – prescribed or borrowed

- 96% CL wear
- Mean duration of symptoms at presentation = 21 days
- Auckland: Initial diagnosis
  - “Contact lens keratitis” 70.6%
  - Viral keratitis 15.5%
  - Acanthamoeba keratitis 12%
- London
  - 49% on antiviral agent
  - Misdiagnosis as HSV associated with poorer outcomes
Distinguishing dendrites

Epitheliopathy

Radial keratoneuritis

Stromal ring infiltrates

Stromal infiltrates

Corneal neovascularisation
Hypopyon

Corticosteroids

On topical corticosteroids before diagnosis

Auckland
- 2001-2008 56%
- 2009-2016 10.3%

London
- 200 – 2012 46%
- Associated with poorer outcomes

Corticosteroids

......the bad and the ugly
- Deleterious in the absence of appropriate anti-infective agent
- Accelerate trophozoite multiplication
- Delayed epithelialisation
- Accelerated stromal loss
- Increased risk of perforation

Microbiology

Corneal scrape
- Positive in 27%
- Reported 9.4 days

Corneal biopsy
- Positive in 33%

In vivo confocal microscopy

- Immediate diagnosis
- Non-invasive
- Multiple examinations over time
- Acanthamoeba keratitis
- Fungal keratitis
- Useful but not perfect

Double walled cyst
- Leukocytes
- Signet ring

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### IVCM Accuracy

- Variability in reported sensitivity and specificity
- Differences in:
  - Type of IVCM
  - Diagnostic criteria
  - Reference standard
  - Masking
  - Observer experience

### Treatment of Acanthamoeba

Successful treatment requires:
- Early diagnosis
- Topical agents:
  - Propamidine isethionate 0.1% [Brolene]
  - Polyhexamethylene biguanide 0.02% [PHMB]
  - Chlorhexidine 0.02-0.04%
- Aggressive therapy

### Treatment Duration

- Clinical response to treatment may take two weeks or more
- Risk of toxic keratopathy
- Mean duration of treatment 6 months

### Prognosis

- **Poor prognostic factors**
  - Time to diagnosis > 3 weeks
  - Initial misdiagnosis as HSV
  - Corticosteroids before diagnosis
  - Stromal ring infiltrates or scleritis

### Conclusions

- Diagnostic challenge
- Clinical suspicion is most important
- Corneal scrape/culture is essential (but poor yield)
- IVCM useful but not perfect
- Delayed diagnosis associated with poor outcomes

### Thank you