Corneal ulcers and uveitis – what is the link?

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Structure of Lecture

- Clinical case – an example of the link
  - What would you do with the case presented?

- corneal anatomy / pathology
  - clinical relevance
  - how type of pathology can help us

- ulcers
  - causes, treatments
  - common mistakes

- uveitis
  - a link between ulcers and uveitis?

What would you do?

23 yo horse presents with tearing and pain in left eye which occurred yesterday. Has been running in a paddock. It has been very dry, and the paddock has a lot of scrub in it.

The Cornea

Normal Anatomy and Healing
- Epithelium
  - Heals by epithelial cells sliding

- Stroma
  - Heals by mitosis
  - Epithelised facettes
  - Nerve endings
  - Retrograde axonal reflex = uveitis

- Endothelium/ Descemet’s membrane
  - Water pumps
  - Poor regeneration

Why is the cornea clear?

- Collagen lamellae are perfectly aligned
- Relatively dehydrated
- Disease = water accumulation in the stroma

Corneal Pathology

If for some reason there is a change to the normal environment, then we get acute then chronic inflammation

Polar Bears v Nuclear Submarine

How does the Cornea respond to acute irritation?

- Initially with oedema (1)
- Then vessel ingrowth (2)
How does the cornea react to chronic irritation?

- Finally responds with pigmentation
- Histologically becomes almost skin like
The Uveal Tract

- Uvea = iris, ciliary body, choroid
- Ciliary body muscle
- Anterior uveitis = iris + ciliary body
- Posterior uvea = choroid

Pathology of the Uveal Tract

- Anterior Uveitis = iris (iritis) + ciliary body (cylitis)
- Posterior Uvea = choroid (choroiditis)
- Both = panuveitis

What is the Uveal Function?

- Nutrition
- Aqueous formation
- Ciliary body for focus
- Heat exchange

NB: blood flow in choroid is 3 x that in the kidney
How does the uveitis cause clinical signs?

- Breakdown of blood aqueous barrier
- Conjunctivitis, oedema, aqueous flare, miosis, adhesions, cataracts

NB: The retrograde axonal reflex causes BAB breakdown.

What is the retrograde axonal reflex?

- Stimulus of the corneal nerves sends noxious stimulation back along the axon as it courses back to the ciliary ganglion BUT on the way it sends a branch to the ciliary body
- This signal to the ciliary body causes ciliary body irritation which releases autacoids
- Release of autacoids = break down of the blood aqueous
- Breakdown of blood aqueous barrier = uveitis

How do I treat uveitis?

- Stabilise blood aqueous barrier
- Anti inflammatoties
- NSAIDS
- Flunixine meglumine – pros and cons
- Steroids
- Atropine
- Analgesia
- Atropine, NSAIDS, Narcotics?

NB: Use Atropine to effect

Back to original case – what would be used here?
Results of initial tests:

- Fluorescein negative
- Faint focal area of corneal oedema
- Slightly miotic pupil
- Retina – normal with no signs of equine recurrent uveitis

What would you do now?

- Normal abscess developing?
- Look for cellular infiltrate in the cornea at oedema site
- No topical steroids
- Aggressive cytology sample
  - Diagnostic
  - Therapeutic

Stromal Abscesses

- Seeing more and more of them
- Initially stromal abscess will be subtle, then as flocculent material develops they are more obvious
Relevant anatomy/physiology of the cornea

3 layers

1. Epithelium
2. Stroma
3. Endothelium

Stromal Abscess – what now?

- Various factors to affect decision
- Proximity to limbus
- Existing vascularisation
- Uveitis control
- How quickly do we need recovery
- Fungal or bacterial

Medical Treatment of Stromal Abscesses

- More likely to use bacterial aetiology
- Aggressive ab’s
- Topical
- Lavage System
- Systemic if blood vessels on cornea
- Base on cytology + culture/sensitivity
- Systemic anti-inflammatories
Surgical treatment of stromal abscesses

If suspected fungal

- Conjunctival grafts
- Pedicles graft
- Hood grafts
- Bridge grafts
- Corneal transplants

Corneal transplants

(1)

(2)

(3)
NB: The problem is graft rejection
**Prognosis of stromal abscesses**

2 factors to treat:

1. Corneal disease
2. Uveitis associated with corneal disease

- Depends on how quickly both can be controlled
- Medical treatment for one may compromise other i.e. NSAIDS