Feline herpes virus

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Photos courtesy of Dr. A LaBelle
Feline herpes virus (FHV-1)

- Cause of Feline Viral Rhinotracheitis
- DNA α- herpesvirus... herpes is “forever”
  - 80% become carriers
  - 45% of these “re-activation” = asymptomatic shedding vs. chronic disease

- Clinical signs:
  - Many subclinical cases
  - Acute vs. Chronic
Clinical signs: acute FHV-1

Typically:
- Mild – severe conjunctivitis and chemosis
- Seromucoid to mucopurulent ocular discharge

Andrew, SE. JFMS. 2001
Clinical signs: acute FHV-1

- Corneal ulceration: dendritic or geographic
- Upper respiratory tract signs
- Typically self limiting
- High viral load = easier diagnosis

Andrew, SE. JFMS. 2001
### Conjunctivitis - differentials

<table>
<thead>
<tr>
<th>Clinical sign</th>
<th>FHV</th>
<th>FCV</th>
<th>Chlamydia</th>
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</thead>
<tbody>
<tr>
<td>Chemosis</td>
<td>++</td>
<td>+/-</td>
<td>+++</td>
</tr>
<tr>
<td>Hyperemia</td>
<td>+++</td>
<td>+/-</td>
<td>++</td>
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<tr>
<td>Keratitis</td>
<td>++</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Malaise/anorexia</td>
<td>+++</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Sneezing</td>
<td>+++</td>
<td>++</td>
<td>+</td>
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<tr>
<td>Nasal discharge</td>
<td>+++</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Oral ulcers</td>
<td>-</td>
<td>+++</td>
<td>-</td>
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<tr>
<td>Ptyalism</td>
<td>++</td>
<td>+</td>
<td>-</td>
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</tbody>
</table>

Maggs, Consultations in feline medicine IV, Ed: August, JR.
Clinical signs: chronic

Chronic recurrent disease

- Adult cat
- Minimal systemic signs
- Unilateral or bilateral ocular disease

Photo courtesy of Dr. A LaBelle
Photos courtesy of Dr. A LaBelle
Ocular disease associated with FHV

- Symblepharon
- Eosinophilic keratitis
- Stromal keratitis
- Keratoconjunctivitis sicca (KCS)
- Sequestrum
- Recurrent conjunctivitis/keratitis
What is symblepharon?

Adherence of the two stromal surfaces = permanent adhesion called: Symblepharon

Pathogenesis:
- Ulceration of the conjunctiva and cornea

Photo courtesy of Dr. Amber LaBelle
Treatment: Symblepharon

- Minor cases – not affecting vision or the functionality of the eye lids – no treatment.

- Remainder of cases: Surgery.
  - Factors affecting outcome:
    - Conjunctival-corneal adhesions – high recurrence rate
    - Previous surgical resection and recurrence – poor px
Treatment - Symblepharon

Surgery = guarded prognosis

- Gradual resection
  - Multiple surgeries over several months
  - Planned resection in conjunction with antivirals
  - Anecdotal evidence

- Amniotic membrane graft
  - Case report
  - Resection of symblepharon and placement of graft
Amniotic membrane graft

- Minimal post op pain
- Quick epithelialization
- Helps minimize new adhesions
Eosinophilic keratitis

VO 2009 Spiess et al.
Eosinophilic keratitis

- Peripheral cornea (temporal or medial)
- Vascular / proliferative corneal lesion

**Diagnosis:**
- Corneal scraping + cytology
- Clinical presentation
Eosinophilic keratitis: cytology

- Eosinophils, Mast cells and neutrophils.
- A normal cornea does not have any eosinophils!!

Photo from: Andrew, SE. VCNA Small animal practice. Immune mediated canine and feline keratitis. 2008 38(2):269
Eosinophilic keratitis: treatment

- 33-79% incidence of FHV-1

**Immunomodulatory**
- Topical steroid (dexamethasone) 4x daily
- (1.5% cyclosporine 2-3 times daily – VO 2009)

**If corneal ulceration or conjunctivitis**
- Topical antibiotics (Chloramphenicol, triple antibiotic)
- Anti-viral medication (topically or orally)
Eosinophilic keratitis: response to therapy

Initial presentation

1 month of treatment

Photo’s courtesy of Dr. A LaBelle
Stromal keratitis

- Less common
- Significant form of the disease – potential for blindness
  - Stromal opacification
  - Corneal rupture

Image: Dr. Michelle Willis published in JFMS 2001 3: 9-16
Stromal keratitis - clinical

- Midstromal neovascularization and cellular infiltrate
- Corneal edema
- Keratomalacia
- Bullous keratopathy
- Descemetocoele +/- rupture
Stromal keratitis - treatment

- If deep corneal ulceration or marked corneal edema/bulla – consider referral.

**Medical management**
- Anti-viral therapy (topical +/-oral)
  - Ganciclovir interferron 4-6 times daily
- Antibiotics
  - Ciprofloxacin, Ofloxacin 4-6 times daily
  - Cefazolin 4-6 times daily
- Anti-collagenase
  - Serum or EDTA (1-2%) 4-6 times daily
- Ecollar
Stromal keratitis - treatment

**Surgical management**

- Bullous keratopathy – third eyelid flap
  - **NOTE:** do not do this if the cornea is melting!

- Conjunctival flap or biosis graft placement
  - Provide support to the cornea
  - Provide vasculature – conjunctival flap
Keratoconjunctivitis sicca

Clinical signs
- Conjunctival hyperemia
- Corneal dryness and neovascularization
- Corneal ulceration

Diagnosis
- STT < 5mm/60sec
- Clinical signs

NOTE: not all KCS is FHV-1 related

Andrew, SE. JFMS 2001. 3: 9-16
KCS: treatment

- **Lubricants**
  - 0.15% Hylashield (iMed Pharma) – long lasting
  - Preservative free artificial tears (gel / ointment) – as often as possible

- **(Pilocarpine)**
  - Oral 0.25% Pilocarpine – titrate to effect (beware parasympathomimetic toxicity)

- **Cyclosporine (Optimmune)** – not licensed in cats
Sequestrum

**Breed**
- Domestic S/M/LH – FHV-1
- Siamese/ Himalayan – not FHV-1

**Diagnosis**
- Clinical appearance
- May have concurrent keratomalacia

Photo: courtesy of Dr. A LaBelle
Corneal sequestrum - treatment

Pre-operative  

3 months post op

Risk of medical management – chronic pain and possibly corneal rupture

Photos: courtesy of Dr. A LaBelle
Recurrent conjunctivitis/keratitis

Clinically
- Adult cat
- URT signs minimal/none

Ocular signs
- Uni/bi-lateral
- Blepharospasm
- Epiphora
- Conjunctivitis
- +/- corneal ulceration

Photo: courtesy of Dr. A LaBelle
Recurrent conjunctivitis/ keratitis

**Treatment:**
- Topical antiviral – Ganciclovir interferon 4-6 times daily for 10-14 days (or until the clinical signs have been resolved for 1 week at least)
- Tear gel

If marked conjunctivitis or repeated “flare ups” – consider systemic anti-viral (Famciclovir)
- Treat other concurrent pathologies (low tear values, corneal ulceration)
Famciclovir...

- Oral anti-viral
- “pro-drug” of penciclovir
- Blood work should be done prior to starting this medication – should not be given in cats with renal compromise.
- Dose: 40mg/kg BID-TID (Thomasy SM 2012)
What about L-Lysine?

- Excellent adjunct therapy!
- Not virucidal – thus cannot be the sole therapy
- Some evidence to support - life long use
- 500mg PO BID
Thank you for your time.