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The cornea is composed of five layers: the precorneal tear film, the corneal epithelium, the stroma, Descemet’s membrane and the endothelium. The feline cornea exhibits some unique diseases as herpetic keratitis, sequestrum and eosinophilic keratitis.

**Bacterial/ulcerative keratitis**

Trauma (scratches) are the most frequent cause of feline bacterial keratitis. Adnexal abnormalities are less frequently involved in cats than they are in dogs. Ulcers if present can be divided into superficial or deep. They are difficult to manage in brachycephalic cats (i.e., Persians). Recurrent ulcers are due to epithelial basement dystrophy, eyelids or tear film abnormalities or viral infection (FHV-1). *Mycoplasma felis* has been found in deep stromal ulcers. The role is not clearly established.

- **Treatment**
  - Medical: Administration of topical broad spectrum antibiotherapy.
  - Surgical: *Grid surgery should not be performed (corneal sequestrum may develop)*
    - Elimination of the cause if established.
    - Removal of any loose corneal epithelium
    - Place a conjunctival pedicle graft

**Herpetic keratitis**

The feline herpes virus (FHV-1) can result in neonatal ocular disorders with conjunctivitis, keratitis and discharge (neonatal ophthalmia). Older kittens and young cats show conjunctivitis with serous to purulent discharge. In older cats, conjunctivitis and keratitis are a result of reactivation of latent virus rather than a sign of primary infection. FHV-1 may also be a cause of anterior uveitis.

- **Clinical findings:** Corneal lesions can present as a punctate keratitis, dendritic ulcers (linear branching erosion) or geographic ulcers (irregular superficial ulcers). Stromal keratitis is secondary to an immune mediated inflammatory reaction.

- **FHV-1 corneal complications.**
  - The virus is pathogen for the epithelial cells. Different ocular complications may occur after primary ocular lesions.
  - Symblepharon is a conjunctival adhesion.
  - Keratoconjunctivitis sicca may be a consequence of glandular ductules obliteration.
  - Large corneal scarring may follow the stromal keratitis
  - Corneal sequestrum may occur after a corneal ulcer.
  - Eosinophilic keratitis is possibly another complication.
- Diagnosis: The diagnosis is based on clinical signs. Dendritic and geographic ulcers are considered as pathognomonic for herpes virus infection. Serology if positive can only confirm exposure. Immunofluorescent antibody testing (IFAT) gives frequently false positive results. Polymerase Chain Reaction (PCR) is the most sensitive and specific technique for diagnosis.

- Treatment is based on the use of: systemic broad spectrum antibiotics (if there is respiratory involvement), topical antibiotics to prevent local bacterial infection and topical antiviral therapy if ulcers are present. Antiviral agents ( trifluridine, idoxuridine, vidarabine, acyclovir) require frequent application (6 times daily during the first week and then at tapered dose). Treatment is continued until one week after clinical signs resolve. Other treatments include oral L-lysine (250-500 mg daily) and oral or topical interferon to stimulate the immune system. Deep ulcers require surgical debridement. Grid surgery should not be performed. Topical cyclosporine or NSAIDs are used to control inflammation and scarring. Corticosteroids should not be used. Prognosis for ocular HIV-1 infection is generally good but recurrences are frequent.

- Corneal sequestrum

Corneal sequestrum is a condition unique to the feline and equine eye, characterized by a collagen degeneration. Synonyms for the condition are: corneal nigrum, corneal mummification, corneal necrosis. The cause of sequestrum is unknown but several factors have a possible role: genetic predisposition as seen in the Persian, Himalayan and Siamese, previous corneal trauma, entropion, tear film abnormalities and FHV-1 infection.

- Clinical findings: The lesion, usually central, presents as a pigmented corneal area.

Appearance is variable ranging from a tan coloration of the superficial stroma to a black plaque causing discomfort. A zone of vascularisation, edema or ulceration may surround the sequestrum.

- Treatment: If a superficial lesion may be left to slough, with topical administration of tears substitutes, early keratectomy, however, is usually considered as the treatment of choice. Excision should be complete. A conjunctival pedicle graft has been reported to prevent recurrences.

- Eosinophilic keratitis

Eosinophilic keratitis (or proliferative keratoconjunctivitis) is another ocular condition unique to the feline and equine eye. The cause of the condition is unknown. The course of the feline disease shares some similarities with the canine chronic superficial keratitis. Skin lesions of the eosinophilic granuloma complex are absent. In one report, FHV-1 has been demonstrated by PCR analysis in 76% of affected cats.

- Clinical findings: Corneal lesions include edema, vascularisation, white masses and white plaque formation. They extend from the limbus.

- Diagnosis: The diagnosis is based on the observation of characteristic clinical signs (ie: plaque). The corneal cytology demonstrates an infiltration of eosinophils, mast cells, lymphocytes and neutrophils.

- Treatment: The feline eosinophilic /proliferative keratoconjunctivitis responds to topical corticosteroids and cyclosporine therapy (application: 2 times daily). Oral megestrol is also effective but not recommended because of the side effects. Treatment achieves control but not cure of the disease.

- Tropical keratopathy

The disease is commonly observed in cats living in many tropical or subtropical areas. Corneal lesions are grey spots localised in the stroma (the disease is named “Florida spots” in US) without inflammation. There is usually no visual disturbance. The precise cause is unknown. Medical treatments are inefficient.

BIBLIOGRAPHY
