

# LACRIMAL SYSTEM and DISEASES

ASSOC. PROF. İREM ERGİN

## LACRIMAL GLAND HAS 2 PORTIONS

### **1. Sekretory Portion**

The lacrimal gland,

Lacrimal gland ducts,

The membrana gland

Accessory glands.

## 2. Excretory portion

PUNCTUM (pl. puncta) leads into

CANALICULUS (pl. canaliculi),

LACRIMAL SAC

NASOLACRIMAL DUCT

NASAL CAVITY

The precorneal tear film (PCTF) is a very thin fluid layer over the corneal surface.

- Maintains a moist environment on the surface of the cornea
- Preventing the eye surface from becoming dry and damaged
- Lubricates the surface of the eye, facilitating the movement of the eyelids

P.C.T.F. has 3 phases

1. Lipid
2. Aqueous
3. Mucoid

## Hyperlacrimation

Excessive watering due to irritation of the corneal and conjunctival surface

Due to trigeminal stimulation.

## Hypolacrimation/absence of PCTF

Gland damage as the result of conjunctivitis/neurological lesions and autoimmune disease.

## Epiphora

Overproduction of tears or decreased drainage of tears

Caused by ocular irritation and inflammation (including [trichiasis](#) and [entropion](#))

an [obstructed tear outflow tract](#) (i.e. ectropion, punctal, canalicular or nasolacrimal duct obstruction).

infections (i.e. [dacryocystitis](#)), [rhinitis](#), and in neonates or infants, failure of the nasolacrimal duct to open.

poor reconstruction of the nasolacrimal duct system after trauma to the area

# Dacryocystitis

Inflammation of the lacrimal sac and nasolacrimal duct.

Dogs, cats, horses, rabbits..etc.

## Etiology

- Obstruction of the nasolacrimal sac and proximal nasolacrimal duct by inflammatory debris
- Foreign bodies (grass awns, sand, dirt..) or masses pressing on the duct

## Clinical Signs

- Conjunctivitis
- Thick mucopurulent exudate at the medial canthus
- Mucopurulent material from the nasal or lacrimal puncta
- Painful dermatitis at the medial canthus
- Abscessation of the sac in chronic cases, fistule

# Dacryocystitis

## Diagnosis

Clinical signs

Dacryocystorhinography

MRI

## Treatment

Nasolacrimal Catheterization

Dacryocystotomy

# Tear-Staining Syndrome

Maltese terrier, poodle, lightly colored hair coat animals are most commonly affected.

The staining is believed to be due to lactoferrin like pigments in the tears.

Epiphora occurs commonly in brachycephalic cats and dogs.

## Treatment

- Treatment of the cosmetic conditions.
- For short-term improvement, oral tetracycline 5 mg/kg once Daily
- In allergic disease, topical anti-allergens and steroids
- Affected animals should not be bred.



# Deficiency of the Precorneal Tear Film

## Mucin Deficiency

Because of the chronic inflammation, metaplasia, hypoplasia or fibrosis, number of conjunctival goblet cells decreased.

STT (schirmer tear test) may be normal.

Because mucin bind the tear to the ocular surface, moisture does not uniformly wet the surface.

## Treatment

- artificial eye drops
- Cyclosporine
- Methylcellulose or polyvinylpyrrolidone derivatives (stimulate natural mucins)

# Deficiency of the Precorneal Tear Film

## Lipid Deficiency

Because of the inflammation of eyelid margin and meibomian glands (common causes are *Staphylococcus* spp., *Malassezia* associated blepharitis, generalized seborrhea, atopy and demodicosis)

Conjunctiva is hyperemic

Mucoid to mucopurulent discharge on ocular surface

Keratitis

## Treatment

- Warm, moist compresses two to three times a day
- Topical and systemic antibiotics (according to bacterial culture)
- In select cases, topical and systemic steroids
- Topical therapy with a lipid substitute (mineral oil, lanolin)

# Deficiency of the Precorneal Tear Film

## Aqueous Deficiency

Common disorder in dogs

Leads to xerosis and KCS

## Keratoconjunctivitis Sicca (KCS)

### Etiology

drug induced

immune mediated

idiopathic

surgically induced

congenital

senile atrophy

neurogenic

Excision of the gland of the third eyelid is a common cause of KCS in dogs.

## Keratoconjunctivitis Sicca (KCS)

### Etiology

- drug induced
- immune mediated
- idiopathic
- surgically induced
- congenital
- senile atrophy
- neurogenic

## Keratoconjunctivitis Sicca (KCS)

**Clinical Signs** depend on if the condition is bilateral or unilateral, acute or chronic, temporary or permanent.

- ✓ Mucoid and mucopurulent discharge
- ✓ Dry ipsilateral nostril
- ✓ Blepharospasm
- ✓ Dry corneal surface
- ✓ Corneal ulceration
- ✓ Corneal vascularization
- ✓ Corneal pigmentation
- ✓ Chronic blepharitis

## Keratoconjunctivitis Sicca (KCS)

### Treatment

- Medical Therapy
  - Topical cyclosporine, tacrolimus and pilocarpine (stimulate natural tear production)
  - Artificial tears, wetting agents, ointments (mineral oil, lanolin..)
  - When cyclosporine or tacrolimus is efficacy at reducing ocular inflammation, topical dexamethasone or prednisolone acetate
  - Topical antibiotics (control secondary infection)
  - Mucolytics (removal of excess mucus)
- Surgical Therapy
  - Parotid duct transposition