**A PRESUMED DYSONTOGENETIC ORBITAL CYST IN A DOG**

Ingrid Allgoewer¹, Sabine Sahri², Michael Burger², Achim D. Gruber³

[1] Animal Eye Praxis, Berlin, Germany, praxis@tieraugen.com  
[2] Praxis for Small Animal Surgery Dreilinden, Berlin, Germany, info@tieroehrwurdig-dreilinden.de  
[3] Institute of Veterinary Pathology, University of Berlin, Germany, achim.gruber@fu-berlin.de

**Case**

- 1-year-old male American Bulldog with a progressive swelling of the nasal aspect of the left eye of 4 months’ duration
- Clinical examination  
  - elastic swelling of the left nasal canthus area with orbital involvement  
  - obstructed nasolacrimal duct
- Fine needle aspiration  
  - 20 ml of an opaque brown fluid, non-diagnostic cytologic findings, negative culture
- Sclerotherapy  
  - repeated injections of the sclerosing agent polidocanol (Aethoxysclerol®) into the cyst were not effective
- Surgery  
  - transfrontal orbitotomy 6 months after initial presentation  
  - removal of the entire cystic structure  
  - recovery uneventful  
  - postoperative unimpaired eye movements and vision  
  - left nasolacrimal drainage system continued to be obstructed  
  - no recurrence of the cystic structure 7 months after surgery

**Photographs of the patient** (a) before surgery, (b) 3 weeks after surgery, (c) 7 months after surgery

**Definitions**

- Dysontogenesis: defective embryonic development
- Primary cyst: no communication with surface epithelium, sinuses, nasal cavity, brain...
- Secondary cyst: extending into the orbit from adjacent structures

**Orbital cysts in human medicine**

- Cysts of surface epithelium  
  - simple epithelial cyst (without adnexal structures)  
  - epidermal, conjunctival, respiratory, apocrine gland - developmental/ after surgical or nonsurgical trauma
- Dermoid cyst: contains adenaxial structures  
  - (epidermal and conjunctival)
- Teratomatous cysts, neural cysts, secondary cysts (e.g. mucocoele), inflammatory cysts (parasitic cysts)

**Veterinary medicine (no consistent classification)**

- Dacycyc (cyst of lacrimal sac, cyst of lacrimal gland)
- Paraorbital (epithelial) cysts, Neural cysts, Dermoid cyst (horse, dog)
- Zygomatic and lacrimal mucoceles
- Cysts as a result of surgical or non surgical trauma
- Inflammatory cysts (parasitic cysts in a rabbit, a chincilla and an ewe)

**Computed tomography and 3D - Reconstruction**

- large orbital cyst with thinning of the adjacent bony structures, periosteal reaction and deformation of lacrimal bone, orbit and maxillary bone

**Histopathology**

- Cyst lumen: The lumen is lined by a cuboidal to cylindrical, non-ciliated epithelium (single layered to multilayered)
- Cyst wall: The wall contains scarce fibrocytes with abundant collagen fibrils with occasional collagenous bands

**Discussion and Conclusion**

**Ethiopathogenesis**

- Primary or secondary cyst - primary: no communication with adjacent structures (lacrimal system, sinus, nasal cavity)...
- Epithelial cyst or dermoid cyst - epithelial cyst: no adnexal structures (hair, sebaceous or sweat glands)
- Dysontogenetic or posttraumatic - dysontogenetic: no history of trauma or surgery
- Normal tissue - gland, glandular excretory duct or nasolacrimal duct: cuboidal to cylindrical epithelium

The described entity is likely to be a dysontogenetic orbital cyst. Ethiopathogenesis remains unclear, however tissue derivation of the cyst from the lacrimal drainage system appears plausible.

**References**


