Management of Orbital Diseases

Key Points:

1. **Exophthalmos vs buphthalmos:**
    - Exophthalmus rarely causes loss of vision, whereas buphthamos almost always does
    - Exophthamus commonly causes protrusion of third eyelid (50% of cases) whereas buphthalmos rarely does
    - IOP may be mildly elevated in SEVERE cases (to 20-30mmHg)
    - Can also measure the horizontal diameter of corneas - should be <1mm different
2.

Table 1
Prognostic Indicators for Proptosis

Favorable Prognosis	Unfavorable Prognosis
Positive direct or consensual pupillary light reflex (a negative reflex is not necessarily poor prognosis)	Non-visible pupil (corneal desiccation or hyphema)
No extraocular muscles avulsed	Scleral rupture
Brachycephalic breed	Greater than 3 extraocular muscles avulsed
Short duration	
Vision on presentation	
Normal posterior segment	

Orbital disease

- Orbital disease causes a change in orbital volume -> enophthalmos or exophthalmos
- Can be intraconal or extraconal
    - Extraconal may result in strabismus and have third eyelid involvement whereas intraconal generally just exophthalmos
- Results in secondary problems e.g. lagophthalmos -> exposure keratitis, ulceration

Retrobulbar abscess/cellulitis/foreign body

- Acute onset and variable degrees of exophthalmos, extraconal swelling, periorbital swelling, fever and pain
- Painful on palpation of orbit, periorbital tissues and/or opening mouth
- May visualize flocculent swelling caudal to last molar
- Unilateral compared to MMM or extra ocular muscle myositis which tends to be bilateral
- Attempt to differentiate between abscess and cellulitis as abscess requires surgical treatment while cellulitis can be managed medically

- MEDICAL management = systemic antibiotics, NSAIDs, pain management, lubrication and soft foods
- SURGICAL drainage = 1cm incision caudal to last upper molar, explore with hemostats
- Cephalosporins, carbepenems and potentiated penicillins recommended
- Low susceptibility to ampicillin, clindamycin, erythromycin and penicillin

Retrobulbar neoplasia

- Most commonly adenocarcinoma (3rd eyelid, salivary, lacrimal, nasal), undifferentiated carcinoma, fibrosarcoma, osteocsarcoma, meningioma, SCC, lymphoma, multi lobular osteochondrosarcoma and neurofibrosarcoma
- 88-95% malignant and have poor prognosis
- Generally slower onset and non-painful (but may become painful if develop necrosis, inflammation or extension into bone)
- Diagnosis is aided via imaging, but requires FNA (lymphoma) or biopsy (trucut - CT or ultrasound guided vs. surgical)
- Treatment is surgical +/- adjunctive ratiation or chemo, retention of globe is not often possible due to malignant nature

Zygomatic salivary disease

- Zygomatic salivary gland is in the ventral orbit, opens opposite the first maxillary molar
- Mucocele
    - SQ or submucosal cavity of mucoid saliva
    - Cause slight formal displacement of globe +/- chemosis, pain on opening mouth, third eyelid protrusion
    - May be secondary to trauma (penetrating, surgical), or duct obstuction from inflammation/fibrosis or sialoliths
    - On US can look similar to abscess, MRI is more diagnostic
    - Treatment is surgical (removal of gland and mucocele)
- Sialodenitis
    - Inflammation of gland
    - may result in mucocele secondarily
    - Uncommon, but causes include ascending infection from mouth, hematogenous infection, immune mediated disease or a response to regional inflammation

Proptosis

- Differentiate from exophthalmus by observing position of eyelid margins
- If not treated immediately causes exposure keratitis, continued lid swelling, decreased chance of saving vision
- >50% remained blind in study of 84 dogs
- Potential long term sequelae:
    - lateral strabismus)due to disinisertion of medial rectus
    - blindness, lagophthalmos, exposure keratitis, retinal degeneration, optic nerve degeneration, KCS, phthisis bulbi

Myositis

- Masticatory:
    - dogs lack a lateral orbital wall and so swelling of muscles of mastication causes pressure on the globe -> exophthalmos
    - present similar to abscessation but generally bilateral
    - treatment is immunosupressive so important to distinguish between the two
    - diagnose via muscle biopsy and detection of antibodies
- Extraocular
    - Can cause intraconal exophtalmus
    - common in golden retrievers <1 year old
    - also thought to be immune mediated, treated with immunosuppression

Retrobulbar haemorrhage

- Secondary to trauma, coagulopathy or vasculitis

QUESTIONS:

1. A 6 year old female spayed golden retriever presents to you for a 2 day duration of difficulty eating hard foods. On examination you find unilateral exophthalmus OS with pain on opening the jaw. No abnormalities are noted on thorough oral and ocular exams or the remainder of your physical exam. Ultrasound evaluation reveals a mass effect caudal to the globe with a cavitated hypoechoic centre. What are your differentials and what would be your next step to obtaining a diagnosis?

2. Describe what physical exam findings and diagnostic test results would assist you in differentiating buphthalmos from exophthalmus.

3. A 1 year old female intact pug presents 1 hour after hitting her head on the bottom of a parked truck. On examination there is proptosis OS. What physical exam findings will influence your treatment decisions (replacement vs enucleation)?

ANSWERS:

1. Fine needle aspiration (+/- CT vs MRI)

2. Ocular exam changes such as corneal edema, loss of vision, third eyelid elevation, IOP

3. Presence of vision and PLRs are good prognostic indicators, hyphema and evidence of extra ocular muscle rupture are poor. Already has positive prognostic indicators of short duration and brachycephalic breed!