Diseases of the guttural pouches

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GUTTURAL POUCHES

• Air-filled, mucosa lined outpouchings of the auditory tubes connecting the nasopharynx to the middle ear

• Function??

• Present in a few species
  – Equidae
  – Tapirs
  – Hyracoidea
  – Some microchiropterans
  – The South American forest mouse
  – +/- rhinoceros & cetaceans
GUTTURAL POUCHES: Normal anatomy & physiology

- Paired
- Approximately 350ml in volume
- Bordered by a number of structures:

  **Dorsal:**
  - Base of skull & 1st cervical vertebra
  - Tympanic bulla & auditory meatus

  **Medial:**
  - Median septum, rectus & longus capitis muscles

  **Ventral:**
  - Retropharyngeal lymph nodes & nasopharynx

  **Lateral:**
  - Parotid & mandibular salivary glands, pterygoid muscles
GUTTURAL POUCHES: Normal anatomy & physiology

- Each pouch connects with the nasopharynx via a funnel shaped pharyngeal orifice that has a fibrocartilage flap.

- Each pouch is separated into a medial & lateral compartment by the stylohyoid bone.

- MEDIAL > lateral
GUTTURAL POUCHES: Normal anatomy & physiology
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A number of vital structures run through each pouch:

- **Internal carotid artery (ICA)**
- **External carotid / maxillary artery (ECA/MA)**

- **Cranial nerves**
  - IX glossopharyngeal
  - X vagus
  - XI accessory
  - XII hypoglossal
PRESENTING SIGNS OF GUTTURAL POUCH DISEASE

Relates to the structures affected:

- **Epistaxis**
  - erosion of wall of ICA / ECA
- **Nasal discharge**
  - haemorrhage / purulent material
- **Dysphagia / laryngeal paralysis**
  - cranial nerve paresis
- **Swelling / Dyspnoea**
  - Distension of pouches) by air, fluid or inspissated material / compression of nasopharynx
GUTTURAL POUCH MYCOSIS

• Relatively uncommon

• POTENTIALLY LIFE THREATENING CONDITION

• Must rule this condition out in horses with epistaxis

• Unknown aetiology; Aspergillus sp. found in lesions

• No geographical, age, breed or gender predisposition
GPM: DIAGNOSIS

• HISTORY
  – Moderate – severe epistaxis
  – May have had several mild bouts of epistaxis
  – +/- dysphagia

• CLINICAL SIGNS
  – Epistaxis may be evident at the time of examination
  – +/- evidence of dysphagia
GPM: DIAGNOSIS

• ENDOSCOPY
  – Blood draining from one (rarely both) ostium
  – +/- DDSP or laryngeal hemiplegia
  – Diphtheritic membrane overlying ICA / ECA
    – * care should be taken not to disrupt the clot and cause a fatal bleed – best to examine the guttural pouch at the surgical facility itself
GPM: FIRST AID TREATMENT

- Assess how much blood has been lost
  - >5 litres clinically significant in a 500kg horse

- Assess the heart rate & mucous membranes
  - HR >60bpm, pale mm indicates hypovolaemic shock

- Keep the horse quiet

- Can administer acepromazine if no evidence of hypovolaemic shock

- Contact surgical centre to discuss referral
  - Usually 3rd / 4th bleed fatal (within 2-3 weeks of first bleed)
GPM: TREATMENT

- **SURGICAL OCCLUSION OF THE AFFECTED ARTERY**
  - Aim: to prevent fatal haemorrhage
  - Have to determine which artery has been eroded by the mycosis lesion
  - The ICA is the artery most commonly affected
  - Surgery to occlude the ECA is more complex
  - Failure to occlude the correct artery may result in fatal haemorrhage
SURGICAL TREATMENT OF GPM

• LIGATION
  – Still carries risk of retrograde haemorrhage from the circle of Willis

• LIGATION & BALLOON CATHETER OCCLUSION
  – Occlusion of the artery & prevents retrograde flow from the cerebral arterial circle

• TRANSARTERIAL COIL EMBOLISATION
  – Performed using fluoroscopy & angiography to selectively occlude the affected artery / arteries with microcoils
SURGICAL TREATMENT OF GPM

- Rarely are both guttural pouches affected
- Mycotic lesion usually spontaneously regresses
- Neurological signs can persist
- Sometimes these signs will improve over time
  - Laryngeal paralysis
  - DDSP and dysphagia
GUTTURAL POUCH EMPYEMA

- Empyaema = purulent material or chondroids within one or both guttural pouches
- Chondroids = inspissated purulent material
- Usually occurs in young horses
- Aetiology:
  - URT infection *strangles
  - Infusion of irritant drugs
GUTTURAL POUCH EMPYEMA

CLINICAL SIGNS

- Intermittent nasal discharge
- Parotid swelling & pain
- Extended head carriage
- Respiratory noise at rest
- Difficulty swallowing & eating
- Occasionally pharyngeal & laryngeal paresis
GUTTURAL POUCH CHONDROIDS

DIAGNOSIS

• Radiography
  – Increased radiodensity of GP on lateral views

• Endoscopy
  – Dorsal pharyngeal compression
  – Purulent / inspissated material in GP
EMPYAEMA: TREATMENT

• Flushing of pouches using catheters inserted via ostia
  – Has to be performed repeatedly
  – Won’t work if chondroids / lot of inspissated material present in pouches

• Endoscopic removal of chondroids
  – Special endoscopic instruments

• Surgical flushing & removal of material
SURGICAL APPROACHES TO THE GUTTURAL POUCHES

1. HYOVERTEBROTOMY
   - Cranial to and parallel with the wing of the atlas

2. VIBORG'S TRIANGLE
   - Borders are:
     - Tendon of the sternocephalicus muscle
     - Linguofacial vein
     - Vertical ramus of the mandible

3. WHITEHOUSE
   - Incision made on ventral midline over the larynx

4. MODIFIED WHITEHOUSE
   - Incision made over the lateral aspect of the larynx
GUTTURAL POUCH TYPOMANY

• One or both guttural pouch(es) becomes filled with air
• Occurs in foals from birth – 1 year old
• Usually unilateral
• Distended, non-painful swelling
• +/- dyspnoea / dysphagia / inhalational pneumonia

• DIAGNOSIS
  – Clinical examination & radiographs

• TREATMENT
  – Creation of a fistula (conventional surgery / laser surgery)
OTHER CONDITIONS OF THE GUTTURAL POUCH

• TEMPOROHYOID OSTEOARTHRITIS PATHY
  – Uncommon, progressive disease of middle ear & temporohyoid joint

• RUPTURE OF VENTRAL STRAIGHT MUSCLES
  – History of trauma, can cause haemorrhage into GP

• MELANOMATOSIS / MELANOMAS
  – Melanomatosis common in grey horses

• NEOPLASTIC MASSES
  – rare
SUMMARY – GUTTURAL POUCH

• Important structure in the horse
• A number of important vascular & nervous structures traverse the pouch
• Clinical signs of guttural pouch disease will depend on the structures affected
• Diagnosis based on endoscopy and less frequently radiography
A FEW OTHER THINGS…
TRACHEOTOMY

INDICATIONS:

• Emergency bypass of URT obstruction
• Route for intubation
• Rest the URT
• Bypass inoperable URT obstruction
HOW TO PERFORM AN EMERGENCY TRACHEOTOMY

- Clip a 20x10cm area on ventral midline at the junction between the middle & upper thirds of the neck.
- Palpate the paired sternothyrohyoideus muscles and tracheal rings.
- Instil 10ml of local anaesthetic solution (e.g. lignocaine / mepivacaine) into skin & underlying tissues.
- Aseptically prepare the site.
- Make a 6-8cm incision on the ventral midline at the junction between the upper & middle 1/3rd of the neck.
EMERGENCY TRACHEOTOMY

- Palpate the two tracheal rings in the centre of the incision
- Make a stab incision between the two rings
- Extend the incision for 1-2cm each side of the midline
  *do not incise more than $\frac{1}{3}$ of the diameter of the tracheal rings (risk damage to adjacent vessels)
- Insert tracheotomy tube
- Secure tube in place
DENTIGEROUS CYSTS

- Uncommon
- Incomplete closure of the 1st branchial cleft
- Contains dental elements e.g. enamel
- Cystic lining produces mucoid fluid

- Clinical signs:
  - Unilateral swelling at base of ear
  - Occasional drainage of fluid

- Treatment – cosmetic
  - Surgical removal
TEMPOROMANDIBULAR JOINT DISEASE

• Uncommon

• Can cause a variety of clinical signs
  – Reduced lateral excursion of jaw
  – Headshaking / headtossing

• Diagnosis
  – Ultrasound
  – Radiography
  – Scintigraphy
  – Arthroscopy
HEAD TRAUMA

- Usually the result of rearing over backwards
- Other blunt trauma e.g. kick or blow to head
- Assess neurological status first & monitor carefully
- Stabilise before performing further diagnostic tests
LIP & TONGUE INJURIES

- Lip injuries common; tongue less so

- Depends on the degree of deformity / injury

- Some lip injuries may be suitable for repair under standing sedation

- GA required for tongue & some lip injuries
EYELID INJURIES

- Common

- Must assess injury to eye itself & other periocular structures

- Repair under standing sedation / GA

- GOOD ANATOMICAL REPAIR ESSENTIAL
JAW FRACTURES

- Not uncommon
- Usually the result of the jaw becoming caught & the horse pulling back quickly
- Surgical repair to realign the teeth
- Technique depends on the site of fracture