**Horner’s syndrome**

*Extended Version*

**Classic case:** Miosis, Enophthalmos, Ptosis, Protruding 3\(^{rd}\) eyelid

**Presentation:** “My Third Sunken Toe”
1. **Miosis** (will not dilate fully in dark),
2. Prolapse of nictitating membrane (3\(^{rd}\) lid)
3. Enophthalmos (sunken eye)
4. Ptosis (“toe”)

- **Horses** – Ipsilateral prominent sweating at base of ear and neck or face, hyperthermia of skin
- **Cattle** – Ipsilateral **LACK** of sweat on face and muzzle
- Male Golden Retrievers are overrepresented

**Most common causes**
- Idiopathic (50% canine cases)
- Otitis media / interna (small animals)
- Brachial plexus avulsion (trauma, esp. hit-by-car (HBC))
- Perivascular jugular injection (too near sympathetic trunk)

**Other symptoms present may help to localize** the site of the lesion
- Monoparesis of thoracic limb (brachial plexus avulsion, nerve root tumor)
- Head tilt, nystagmus, facial nerve paralysis (otitis media/interna – small animals only)
- Respiratory distress (thoracic mass)
- Tetraparesis, altered mentation (central lesion)

3 locations of lesions – other associated symptoms
- **Central**
  - (First order) – brainstem or C\(_1\)-T\(_3\) spinal cord
  - Altered consciousness, cranial nerve deficits
  - Tetraparesis, hemiparesis, ± LMN signs (flaccid, weak withdrawal) in ipsilateral thoracic limb(s)
  - Horses will sweat over trunk, neck and head

- **Preganglionic**
  - (2nd order) – **brachial plexus**, cranial thoracic sympathetic trunk, cervical sympathetic trunk
  - Brachial plexus paresis/paralysis of ipsilateral limb
  - Respiratory distress from intrathoracic mass
  - Horses will sweat over head and neck, ipsilateral

- **Postganglionic**
  - (3rd order) – **Middle ear** (small animals only), **guttural pouch**, cavernous sinus, orbital disease
  - Head tilt, nystagmus, ± facial nerve paralysis
  - Ophthalmoplegia
  - Exophthalmos, discomfort, optic nerve or oculomotor deficits
  - Horses will have ipsilateral head sweating

*Image courtesy Nottingham Veterinary School*
Horner’s syndrome

**DDX:** Conjunctivitis, uveitis, ocular trauma, phthisis bulbi, hypothyroidism, equine dysautonomia

**Test(s) of choice:**
- **Pharmacological localization** – not always practical or reliable

<table>
<thead>
<tr>
<th>Active substance</th>
<th>Central</th>
<th>Preganglionic</th>
<th>Postganglionic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocaine 6%</td>
<td>Slight mydriasis</td>
<td>No dilation</td>
<td>No dilation</td>
</tr>
<tr>
<td>Phenylephrine 10%</td>
<td>No dilation</td>
<td>No dilation</td>
<td>Normal mydriasis</td>
</tr>
<tr>
<td>Hydroxyamphetamine 1%</td>
<td>Normal mydriasis</td>
<td>Normal mydriasis</td>
<td>No or incomplete mydriasis</td>
</tr>
</tbody>
</table>

- **Serum glucose** – Diabetes mellitus occasionally associated with Horner’s syndrome
- **Thyroid testing** – hypothyroidism occasionally assoc. w/ Horner’s
- **Thoracic radiographs** – Thoracic mass (preganglionic)

- **Electromyography** – In case of monoparsis/monoplegia - determine extent of denervation of closely associated motor nerves (preganglionic)

- **Cervical spinal radiography/myelography** – Cervical spinal tumors, ruptured disc (central dz)

- **MRI of brain and C1-T3** – brainstem mass, cervical spinal tumors, ruptured disc (central dz), brachial plexus tumors (preganglionic)

- **CT of skull** (or MRI) – otitis media/interna, retrobulbar disease, postganglionic

**Rx of choice:**
- **NO treatment necessary** for the Horner’s itself
- Treat underlying cause + supportive.
- **Brachial plexus avulsion**
  - Treat for trauma/shock
  - Prevent self-mutilation/damage to affected limb- protective booties, E-collar,
  - +/- neuropathic analgesia (ie: Gabapentin) may prevent paresthesia, self-mutilation

**Prognosis:**
- Depends on underlying cause

- **Brachial plexus avulsion**
  - Loss of deep pain sensation= Grave Px for return to function
  - Preservation of deep pain sensation= Guarded to good Px for return to function (wks-months)
  - LACK of neurologic improvement over a 4-week period suggests permanent deficit

*Image courtesy Joel Mills*
**Prevention:** Use well-trained personnel for jugular blood draws

**Pearls:** Approximately 50% of cases in dogs are idiopathic

**Images and links worth a look**
- Cat with Horner’s syndrome. Lisacat on Flickr
- Feline nasopharyngeal polyp surgical complication. Vet Surgery Central

**Ipsilateral left facial sweating in horse** with Horner’s syndrome, following inadvertent perivascular jugular injection. Note smaller angle of eyelashes on the left side.

**Video clips** of animals with Horner’s syndrome: Holstein, Irish Setter, Cat #1, Cat #2 from, *Veterinary Neuroanatomy & Clinical Neurology*, de Lahunta & Glass, Cornell University


My Notes: