APPROACH AND DIFFERENTIAL DIAGNOSIS OF HEAD TILT AND VESTIBULAR SIGNS

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OUTLINE

• REVIEW OF VESTIBULAR SIGNS
• DIAGNOSTIC APPROACH
• DIFFERENTIATE CENTRAL FROM PERIPHERAL SIGNS
• DIFFERENTIAL DIAGNOSES
• DIAGNOSIS AND TREATMENT COMMON CAUSES

VESTIBULAR SIGNS

• HEAD TILT
• VESTIBULAR ATAXIA
• STRABISMUS
• NYSTAGMUS
• CIRCLING
• VEERING, LEANING
• FALLING, ROLLING

HOW DO WE APPROACH THESE CASES?

• ESTABLISH WHETHER SIGNS ARE CAUSED BY A PERIPHERAL OR CENTRAL LESION
• LIST DIFFERENTIAL DIAGNOSES
• MOST LIKELY FIRST
• SELECT ANCILLARY TESTS
• ACCORDING TO LESION LOCALIZATION & DIFFERENTIALS
• BLOOD WORK, OTOSCOPY, RADS, CSF, CT, MRI
• TREAT ACCORDING TO DEFINITIVE DIAGNOSIS

DIFFERENTIATING CENTRAL FROM PERIPHERAL VESTIBULAR SIGNS

CENTRAL VESTIBULAR SIGNS

• CHANGES IN MENTAL STATUS – SOMNOLENCE
• DEFICITS IN POSTURAL REACTIONS – PROPRIOCEPTION
• CEREBELLAR SIGNS
• VERTICAL OR POSITIONAL NYSTAGMUS
• INVOLVEMENT OF OTHER CRANIAL NERVES – V, VI, VII

PERIPHERAL VESTIBULAR SIGNS

• NO SOMNOLENCE OR PROPRIOCEPTIVE DEFICITS
• **Head tilt** – towards side of lesion
• **Nystagmus**
  o Fast phase away from side of lesion
  o Horizontal or rotational
  o NOT vertical or positional
• **Strabismus** – usually ventral
• **Vestibular Ataxia**
  • Leaning, falling, rolling
  • ± Horner’s syndrome & facial paralysis

**Differentials – VITAMIN - D Peripheral Vestibular Disease**

  • V -
  • I - Idiopathic vestibular disease
  • T – Trauma, Aminoglycoside toxicity
  • A – Congenital vestibular disease
  • M – Hypothyroidism
  • I – Inflammatory – Otitis, Polyps
  • N – Ear tumors
  • D -

**Neoplasia**

  • Most commonly older animals
  • Bony tumors – may have oral or neck pain
  • Lymphoma, squamous cell carcinoma, ceruminous gland adenocarcinoma
  • Imaging
  • Lytic or proliferative regions on radiographs
  • Much easier to visualize with CT or MRI
  • Disease can progress and involve CNS
  • Biopsy – key to select specific treatment

**Idiopathic Vestibular Disease**

  • Geriatric dogs (?), cats any age
  • Peracute onset vestibular signs
  • Signs remain severe for 24-48 hours
  • Do not have Horner’s or facial paralysis
  • Ancillary tests all normal (CT, CSF, MRI)
  • Unknown cause
  • Improve & start to compensate in 5 days
  • Meclizine (Antivert) or Cerenia (higher dose)
  • Head tilt may remain for a long time

Idiopathic vestibular disease is ALWAYS peripheral. There is NO Idiopathic Central Vestibular Disease.

**Otitis Media-Interna**
• Usually history of chronic otitis externa
• ± Horner’s syndrome and facial paralysis
• Otoscopy – cytology, culture and sensitivity
• Radiographs – can see chronic changes
• CT or MRI - superior
• Treatment – Systemic antibiotics min 6 wks
• Guided by CS, clavamox, enrofloxacin initially
• Myringotomy and ear flush
• Surgery – VBO - Cats
• Good prognosis – if treated well and early

Differentials – Vitamin - D Central Vestibular Disease

• V – Cerebellar infarct
• I – Encephalitides
• T – Trauma, Metronidazole toxicity
• A –
• M – Hypothyroidism
• I – Encephalitides
• N – Neoplasia, Thiamine deficiency
• D -

Encephalitides

• Any cause
• Granulomatous meningoencephalitis - GME
• Young adult dogs, small breeds - Poodles, Terriers
• Focal or multifocal – cerebello-medullo-pontine area
• Necrotizing Encephalitis
• Yorkshire, Maltese, Shi-Tzu, Chihuahua, (Pugs)
• Diagnosis
• CSF, MRI, serology, (CT)
• Treatment
• Prednisone 0.5-1.0 mg/kg q12H, q24H, q48H
• Azathioprine 2 mg/kg q24H – later EOD with pred
• Cytosar 200 mg/m2 IV infusion every 3 weeks

Neoplasia

• Meningiomas, choroid plexus papilloma
• Central signs – somnolence, proprioceptive deficits, cranial nerve deficits III, VII, IX, X
• Diagnosis
• MRI (best), CT, CSF Analysis, biopsy
• Treatment
• Prednisone 0.5-1.0 mg/kg q12H, q24H, q48H
• Radiation Therapy
• Chemotherapy – questionable benefit
• Surgery
• Prognosis – variable

Hypothyroidism

• Vestibular signs usually without systemic signs (70%)
• Median age – 7 years (5-10)
• Either central or peripheral disease
• Acute or progressive presentations
• High cholesterol – only consistent finding
• Consistently low TT4 and FT4
• Improvement with levothyroxine – usually in 4 days

Summary

The key point when presented with a patient with vestibular signs is to find out whether the lesion is central or peripheral

Main causes of vestibular signs are:

Peripheral – idiopathic and otitis m-interna

Central – encephalitis and neoplasia

Peripheral vestibular disease usually carries a better prognosis