Acute Spinal Cord Myelopathy

Acute Non-compressive Nucleus Pulposus Extrusion (ANNPE) and Fibrocartilaginous Embolism (FCE)

Mary Stallings, DVM
Neurology Intern
BVNS - Richmond

November 5, 2017
Overview

• Definitions/Terminology
• Signalment/History
• Diagnostics
• Prognosis
• Treatment
Definitions/Terminology

- Myelopathy: spinal cord dysfunction
- Types of Disk disease
  - Hansen Type I
  - Hansen Type II
  - Acute Non-compressive Nucleus Pulposus Extrusion (ANNPE)
- Other acute spinal cord myelopathy
  - Fibrocartilaginous embolism (FCE)
Acute non-compressive nucleus pulposus extrusion

• AKA: ANNPE, Type III Disk (misnomer), High velocity low volume extrusion, Missile disk, splatter disk (some overlap with Type I), liquid disk

• Rupture of the intervertebral disk capsule under pressure (traumatic) with explosive extrusion of the nucleus pulposus
Normal
Type I Disk Disease
Type II Disk Disease
Acute non-progressive myelopathies

ANNPE: The spinal cord is contused by hydrated disk material due to increased discal pressure - often after exercise or trauma

FCE: Embolization of the spinal vasculature with fibrocartilagenous material (histologically similar to disk material) resulting in ischemic insult to the spinal cord - often associated with exercise or trauma
History/Signalment

- Large breed dogs predisposed
- Acute/peracute pain
  - Resolves within 24h for FCE
  - ANNPE may have some residual pain
- Non-progressive after 24h
- Often lateralizing (one side worse than other)
- Continence?
Exam

- Mentation: normal
- Ambulation: paresis to plegia, ataxia
- Cranial Nerves: normal
- Spinal reflexes: (stretch reflexes and withdrawal) normal to decreased to absent
- Proprioception: (placing, hopping) decreased to absent
- Cutaneous trunci: note cut off, if any
- Vertebral column hyperesthesia: variable to absent
- Nociception (superficial/deep pain perception)
You localized the lesion, What next?

- Referral to neurologist.
- Is spinal imaging recommended?

MRI can be both diagnostic and prognostic!
MRI

• Ddx to rule out: Type I Disk disease, diskospondylitis, neoplasia, syringomyelia, etc.

• Helps to distinguish between FCE vs ANNPE
  ▪ Alters treatment recommendations (rest)
  ▪ Prognosis can vary even if signs are similar

• Severity of spinal cord signs can alter prognosis
MRI: ANNPE
MRI: FCE
Negative prognostic indicators

- Absence of nociception
- LMN signs
- Symmetry
- Severity of signs at presentation
- Ease of nursing care/rehab
- Lack of improvement
-Extent of MRI lesion
- Significantly more likely to have unsuccessful outcome if:
  - Lesion length > 2 vertebral bodies (LL:VL)
  - % cross-sectional area of the lesion > 66% (PCSAL)

(De Risio 2007)
• Significantly more likely to have unsuccessful outcome if:
  • Lesion length > 2 vertebral bodies (LL:VL)
  • % cross-sectional area of the lesion >66% (PCSAL)
(De Risio 2007)
Fecal Incontinence - Recent studies

- Overall risk (Fenn 2016)
  - 40% with FCE
  - 7.7% ANNPE

- With T3-L3 lesions
  - 32% ANNPE (De Risio 2009)
  - 0% FCE (De Risio 2008)

- 5x more likely with presumptive ANNPE(23%) than FCE(7%) (Mari 2017)
Treatment

• Goals
  ▪ Reduce secondary spinal cord injury
  ▪ Nursing care
  ▪ Physical rehabilitation

http://www.ballstonspavet.com/coupons-underwater-treadmill-exercises/
Treatment

Manage urination

- ANNPE
  - **Crate rest** at least 2w, slow return to normal activity +/- pain meds
  - After initial crate rest consider physical rehab

- FCE
  - Physical rehabilitation

No Chiropractics!!!!

https://www.adoptapet.com/blog/how-to-crate-train-your-puppy-or-dog/#.Wfmi9jtrzIU
Recovery

• Dogs with ANNPE significantly lower chance of successful outcome (unassisted ambulation and urinary/fecal continence) (Mari 2017)
  ▪ 73% ANNPE
  ▪ 90% FCE
• Recovery rates 58% to 90%

http://rehabvets.org/TreatmentsUsed.lasso
QUESTIONS?
References


Inter- and intraobserver agreement for diagnosing presumptive ischemic myelopathy and acute noncompressive nucleus pulposus extrusion in dogs using magnetic resonance imaging
