ACVR CT/MRI society – Case of the Month
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This month's case was provided by:

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- Signalment:
  - 4-year-old male neutered Greyhound

- History:
  - Acute onset paraplegia after jumping down from the car

- Study performed:
  - Sagittal T2w images (TR 3550, TE 120, Slice thickness 2.0mm)
  - Sagittal Short TI Inversion Recovery (STIR) (TR 3500, TE 80, Slice thickness 2.0mm)
  - Transverse T2w images (TR 3000, TE 120, Slice thickness 3.0mm)
  - Transverse T2*w gradient echo images (TR 8, TE 4, Slice thickness 1.0mm)
  - Pre-contrast transverse T1w images (TR 500, TE 8, Slice thickness 3.0mm)
  - Post-contrast (gadobutrol [Gadovist] 0.1ml/kg, 0.1mmol/kg) transverse T1w images (TR 500, TE 8, Slice thickness 3.0mm)

- Findings:
    - At the L1 vertebra, there is a well-defined collection of extradural material along the left, right and ventral aspects of the vertebral canal. The material is homogeneously T2w hyperintense and slightly T1w hyperintense to the spinal cord. There is moderate bilateral compression and distortion of the spinal cord and a thin rim of T2w and T1w hyperintense epidural fat between the material and the spinal cord. On gradient echo images, the material is predominantly hyperintense to the spinal cord but contains several hypointense foci at its caudal extent. There is no enhancement of the material post-contrast.
    - Overlying the L1 vertebral body there is an ill-defined region of intramedullary T2w hyperintensity within the spinal cord, that is isointense to normal spinal cord on T1w images.
    - The intervertebral discs and paravertebral tissues are considered normal.

- Conclusions:
    - L1 - Extradural material most consistent with subperiosteal vertebral hemorrhage and moderate bilateral spinal cord compression.
    - Intramedullary T2w hyperintensity – DDx: spinal cord edema, less likely gliosis.

- Outcome/Follow up:
    - The dog underwent right-sided L1 pediculectomy. A subperiosteal hematoma was confirmed and decompression performed. Gradual improvement of neurologic signs occurred postoperatively.
    - No underlying cause for hemorrhage was identified

- Comments:
    - The MRI findings are most consistent with subperiosteal vertebral hemorrhage. Subperiosteal vertebral hemorrhage is a rare cause of spinal cord compression – there is a single report of MRI findings of this condition in a greyhound.[1] The well-defined bilateral distribution and signal intensity of the extradural material are consistent with the findings previously reported. The absence of signal void on gradient echo images is consistent with the presence of hyperacute hemorrhage (oxyhemoglobin). As in the previous report, no cause of hemorrhage was identified.

- References:

1. Theobald A, Dennis R, Beltran E. Imaging diagnosis - spontaneous subperiosteal vertebral hemorrhage in a greyhound. *Vet Radiol Ultrasound*. 2014;55(4):420-423.