Gadolinium administration in low field MRI examination of suspected intervertebral disc extrusion in dogs rarely alters the location or surgical approach of the decompressive surgery but may improve the certainty of diagnosis

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OBJECTIVES

To demonstrate gadolinium-based contrast enhancement of extradural compressive material associated with intervertebral disc extrusion in dogs on low field magnetic resonance imaging (MRI) studies and determine how frequently addition of contrast-enhanced T1W sequences confirmed or changed the location of extradural disc material and recommended surgical approach.

METHODS

MR images of 20 dogs diagnosed with intervertebral disc extrusion were reviewed. The scanning protocol included sagittal and transverse T2-weighted and T1-weighted pre and postcontrast sequences. Images were reviewed by a 3rd year diagnostic imaging resident and a boarded Neurology specialist. Reviewers were blinded to case details and assessed:

- 1) The location of extradural disc material
- 2) Whether extradural compressive material within the vertebral canal contrast enhanced;
- 3) If enhancement *occurred*, did this confirm or change the location of the material and the recommended surgical approach.

RESULTS

Contrast enhancement of extradural compressive material was identified in 17/20 (85%) of dogs. 16/20 (80 %) of dogs underwent decompressive surgery confirming the location of the disc material, the remaining cases were managed conservatively. In 13/20 (65%) of dogs, the contrast enhancement was considered to improve the certainty of the location for surgery, whilst in 7/20 (35%) dogs it was not considered beneficial. In 2 cases, for one reviewer, the contrast enhancement altered the surgical approach.

Fig.1 : T1w transverse image of the L3-L4 disc space. pre contrast administration. A small left sided hypointense material is seen

Fig 2 : The material is hyperintense in the post contrast T1w images at the level of L3-L4 disc space.

CLINICAL SIGNIFICANCE

Gadolinium-based contrast agents in low field MRI can aid the diagnosis of intervertebral disc extrusion in dogs by improving certainty of location and extent of extradural material in some cases. Moreover, contrast administration may alter surgical approach.