Dog

Stereotactic brain biopsy in dog.

Vertebral lesions and associated neurological signs occur in dogs with multiple myeloma, however, veterinary literature describing MRI findings is currently lacking. The objective of this multicenter, retrospective, case series study was to describe neurological signs and MRI findings in a group of dogs that presented for spinal pain or other neurological deficits and had multiple myeloma. Electronic records of four veterinary referral hospitals were reviewed. Dogs were included if they had a pathologically confirmed diagnosis of multiple myeloma, had presented for spinal pain or other neurological signs, and had undergone MRI of the vertebral column. The MRI studies were evaluated and the anatomical location of lesion(s), signal intensity, presence of extra-dural material, degree of spinal cord compression, extent of vertebral lesions, and contrast enhancement were recorded. Twelve dogs met inclusion criteria. Most dogs (n = 8) had a chronic progressive history, with varying degrees of proprioceptive ataxia and paresis (n = 11), and spinal pain was a feature in all dogs. The MRI findings were variable but more consistent features included the presence of multiple expansile vertebral lesions without extension beyond the outer cortical limits of affected vertebrae, and associated extradural material causing spinal cord compression. The majority of lesions were hyper- to isointense on T2 (n = 12) and T1-weighted (n = 8) sequences, with variable but homogeneous contrast-enhancement (n = 12). These described MRI characteristics of multiple myeloma may be used to aid early identification and guide subsequent confirmatory diagnostic steps, to ultimately improve therapeutic approach and long-term outcome [1)].

Congenital vertebral malformations are common findings on diagnostic imaging of the vertebral column in “screw-tailed” brachycephalic dogs. The aims of this study were to evaluate the prevalence and anatomical characteristics of lumbosacral congenital vertebral malformations in French Bulldogs, English Bulldogs, and Pugs presenting for problems unrelated to spinal disease, as well as possible associations with the degree of tail malformation, lumbosacral intervertebral disc herniation, or spondylosis deformans. In this retrospective cross-sectional study, CT scans of vertebrae L6 to S3 and of the coccygeal vertebrae were reviewed for type of congenital vertebral malformations (hemivertebrae, block vertebrae, lumbosacral transitional vertebrae, and spina bifida), lumbosacral intervertebral disc herniation, lumbosacral spondylosis deformans, and degree of tail malformation. In 76 (51.0%) of the 149 included dogs (53 French Bulldogs, 37 English Bulldogs, and 59 Pugs) at least one type of congenital vertebral malformations was found, with lumbosacral transitional vertebrae being the most common (34.2%). There was a significantly higher prevalence of lumbosacral transitional vertebrae (54.2%) and lower prevalence of hemivertebrae (1.7%) in Pugs compared to English (13.5% and 24.3%, respectively) and French Bulldogs (26.4% and 32.0%, respectively). Tail malformation was significantly more severe in dogs with evidence of hemivertebrae. Congenital vertebral malformations are a common finding in the lumbosacral vertebral column of French Bulldogs, English Bulldogs, and Pugs. These anatomical variances need to be considered when interpreting diagnostic studies and when planning for neurosurgical and neurodiagnostic procedures. Furthermore, this study suggests a possible association between the degree of tail malformation and lumbosacral hemivertebrae [2)].

Discectomy is a common surgical treatment for disc herniations in the canine spine. However, the effect of these procedures on intervertebral disc tissue is not fully understood. The objective of a study of Grunert et al., was to assess cervical degenerative disc disease changes undergoing discectomy procedures, in vivo.

Discectomies led to a 60% drop in disc height and 24% drop in foraminal height. Segments did not fuse but showed osteophyte formation as well as endplate sclerosis. MR imaging revealed terminal degenerative changes with collapse of the disc space and loss of T2 signal intensity. The endplates showed degenerative type II Modic changes. Quantitative MR imaging revealed that over 95% of Nucleus Pulposus tissue was extracted and that the nuclear as well as overall disc hydration significantly decreased. Histology confirmed terminal degenerative changes with loss of NP tissue, loss of Annulus Fibrosus organization and loss of cartilage endplate tissue. The bony endplate displayed sclerotic changes.

Discectomies lead to terminal degenerative changes. Therefore, these procedures should be indicated with caution specifically when performed for prophylactic purposes [3].

The prognosis for functional recovery of urinary continence, faecal continence and tail function in ambulatory dogs with caudal lumbar intervertebral disc extrusion following surgical treatment is good. Larger studies are needed to identify prognostic factors associated with failure of recovery [4].

1)
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2)
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3)
Grunert P, Moriguchi Y, Grossbard BP, Ricart Arbona RJ, Bonassar LJ, Härtl R. Degenerative changes of the canine cervical spine after discectomy procedures, an in vivo study. BMC Vet Res. 2017 Jun 23;13(1):193. doi: 10.1186/s12917-017-1105-5. PubMed PMID: 28645289; PubMed Central PMCID: PMC5481861.

4)
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