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TYPE II thoracolumbar disc disease. What should we do?

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Thoracolumbar annular protrusions were first described in 1952, although it is not until 1997 were the first clinical details of five cases are reported. A review of the published literature reveals only 48 dogs with annular protrusions.

Degenerative annular protrusion occurs following hyperplasia, hypertrophy and partial rupture of the annulus fibrosus with bulging of the dorsal annulus into the vertebral canal. This is thought to be a very slow process, especially compared with nuclear protrusions. The spinal cord injury and therefore the associated clinical signs are the result of the degree of spinal cord compression, that leads to focal ischemia, demyelination, loss of axons and focal areas of malacia. Chronic spinal cord compression can lead to irreversible cord atrophy.

Annular protrusions usually affect large, non-chondrodystrophic dogs. In the largest survey published to date that include 36 dogs, the German shepherd dog was the most commonly affected breed by far, representing more than half of all cases (20). Other reported breeds include the Labrador retriever, the basset hound, the Staffordshire bull terrier and the Weimaraner. Annular protrusions are not reported in the small chondrodystrophic dogs although it has been seen by the author in the Pekingese and the Jack Russell terrier.

Affected dogs are usually over 7 years of age, in contrast with nuclear protrusions were younger dogs are usually reported in the literature. Male dogs tend to be overrepresented. Affected animals present with variable degrees of neurological dysfunction, being dogs with ambulatory paraparesis the most frequent clinical presentation. Because of the slow progression of clinical signs, affected dogs are rarely non-ambulatory at the time of clinical presentation and of those reported cases that presented as non-ambulatory, there are no cases that were paraplegic or presented with urinary incontinence. The rate of onset of neurological signs can vary from peracute to chronic. This may only represent the ultimate event that lead to a significant deterioration which prompts the owner to seek veterinary attention and may not reflect the degree of spinal cord compression, that leads to focal ischemia, demyelination and loss of axons and focal areas of malacia. Chronic spinal cord compression can lead to irreversible cord atrophy.

Thoracolumbar annular protrusions have been managed by conservative treatment management or by decompressive surgery alone or in combination with vertebral stabilisation.

Reported outcomes for conservative management suggest that this is a non-effective way of preventing further deterioration as almost 50% of reported cases treated non-surgically were euthanatized within a year due to further progression of clinical signs. However there was no difference in outcome in those reported cases when compared to those managed by surgical decompression alone or in combination with vertebral stabilisation.

Decompressive surgical techniques described for the management of thoracolumbar annular protrusions include standard hemilaminectomy with or without annulectomy of protruded material alone or in combination with vertebral plate stabilisation, and a lateral corpectomy with excision of protruded material. Published results suggest that surgical management can be effective in the treatment of thoracolumbar annular protrusions.

WHAT SHOULD WE DO?

Conservative management may not be adequate in preventing further deterioration of the disease but may be the best management option in some patients when multiple affected sites are present, the clinical signs are very mild, or the expected deterioration rate will be so slow that it is accepted despite the inevitable progression of clinical signs, especially if surgical intervention carries a guarded prognosis or the dog’s life expectancy is limited due to ageing or other concomitant disease. The unsuccessful reported cases were neurological deterioration was observed and euthanasia was chosen, may not be truly representative as these dogs could have or develop other neurological disease (e.g. degenerative myelopathy) and no attempts were made to obtain a final diagnosis once the initial investigations and a presumptive diagnosis was made.

Standard surgical decompression techniques are not capable of adequately decompressing the spinal cord.
as the ventral midline or ventrolateral location of the protruded disc means that at best, only partial decompression can be adequately performed. Difficulties include the limited access to the ventral aspect of the vertebral canal as well as the wrapping effect of the spinal cord over the protruded annulus. These are reasons that some authors have used to propose surgical stabilisation of the affected vertebrae, in order to promote atrophy of hypertrophic dorsal annulus and therefore achieve long-term spinal cord decompression (as it is described in the management of cervical caudal spondylomyelopathy related to annular protrusions). There is limited information to date to support that surgical stabilisation is superior to decompressive surgery alone (providing this is adequately achieved) nor evidence that atrophy of the protruded annulus fibrosus does indeed occur. In addition, there is no information available that suggests that multiple vertebral stabilisations can be safely performed without long-term consequences to the spine biomechanics.

Lateral corpectomy has been described as a surgical technique that allows effective access to the vertebral canal in order to achieve radical and successful decompression. Excellent results have been reported but with limited case numbers (only seven). Details of the authors’ inclusion criteria (or more important, the exclusion criteria) are not available so these results are very likely to be biased. In addition, none of these cases were treated at multiple sites so the effect of this technique if performed simultaneously in multiple sites is unknown.

There should be no doubt that this condition is a difficult and challenging disease and that more information regarding many aspects of the disease process as well as the management options will be required if we want to provide adequate care to dogs presenting with this condition. Until more information becomes available the surgeon will be faced with many unanswered questions that will difficult a clinical decision regarding the management of these cases.

As a general guideline, my approach to these cases is: in the case of the younger dog (less than 6-7 years of age) with single or multiple discs protrusions regardless of neurological status I proposed surgical decompression via hemilaminectomy followed by surgical stabilization using vertebral body plates (in case of single or non adjacent discs) or screws and bone cement. A temporary (up to six weeks) worsening of the neurological status is not uncommon but the dog should return to pre-surgical status and improve beyond that in three-four months. In the case of the aging dog, if the neurological status is mild or in cases with multiple affected discs, conservative management with low dose corticosteroids (prednisolone 0.1 mg/kg bid) can be effective until a significant deterioration occurs, in which case euthanasia or surgery could be considered. For dogs with more severe neurological signs, surgery is perhaps the best option although the owner should be aware of the likely lengthy postoperative period and that a complete recovery is highly unlikely.

REFERENCES