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Diagnosis of Cervical Vertebral Stenotic Myelopathy
S M Reed, DVM, Dip ACVIM
Rood and Riddle Equine Hospital, Georgetown Road, Lexington, Kentucky USA
Email: sreed@roodandriddle.com

Cervical vertebral malformation is one of the most common causes of neurologic disease in horses worldwide. The most important feature of this condition is a stenotic vertebral canal as a result of abnormal vertebral development resulting in compression of the spinal cord. Typically the narrowing is identified between the 3rd and 7th cervical vertebra. The disorder appears to be a multifactorial disease thought to be a developmental disorder that begins early in life, perhaps even in utero [10]. It is more prevalent in young male horses, especially among Thoroughbreds [2]. Vertebral canal stenosis may result from abnormal bone development, vertebral instability, degenerative changes or soft tissue hypertrophy within the vertebral canal leading to a narrowed canal and injury to the spinal cord. The pathogenesis of this syndrome may have a role of genetics predisposing the horse to a narrow spinal canal and the problem can then be aggravated by other environmental factors such as diet, rate of growth and gender. Trauma may speed up the onset of the clinical signs. Investigators have suggested osteochondrosis of the cervical vertebrae as contributing to or as the sole underlying problem in this disease process [4, 10-12]. Many factors have been suspected to play a role in the development of osteochondrosis in the appendicular and the axial skeleton of the horse. Included among these factors are genetic predisposition, endocrine dysfunction, dietary or nutritional imbalances, biomechanical stress and rate of growth. The underlying abnormalities associated with osteochondrosis result in abnormal bone metabolism as well as damage to cartilage. In a study designed to examine the frequency and severity of osteochondrosis in horses with cervical vertebral stenotic myelopathy Stewart et al identified a generalized narrowing of the vertebral canal of horses with cervical vertebral stenotic myelopathy compared to clinically normal horses [12]. This finding of a smaller sagittal diameter throughout the vertebral canal rather than only at the site of compression indicates this problem is related to a general failure of vertebral canal development, and not simply a focal malformation due to arthritis or some biomechanical disorder. It follows that in any horse with a narrow vertebral canal, development of arthritic changes of the articular processes or abnormalities of the growth plates of the vertebral bodies may lead to stenosis and contribute to the clinical signs [12].

Horses with CVM will present with symmetric ataxia, paresis, and spasticity that is delegated almost entirely to the hindlimbs. Toe dragging, stumbling and circumduction of the hindlimbs will also be apparent. These signs tend to be exaggerated when the horse moves with its head elevated. The horse may also stand base wide when at rest.[10, 12, 17-19]. The onset of clinical signs often appears quite acute, despite the fact that the signs may have been present and slowly progressive for several months. In some horses the onset may follow a traumatic episode or a day of very hard playing while turned out. CVM manifests itself as both a loss of awareness of the limbs along with weakness and ataxia while walking.

The most valuable test to diagnose cervical vertebral malformation is to identify stenosis of the vertebral canal. Lateral views of the cervical vertebral column are often an informative ancillary diagnostic test when searching for a compressive site or lesion. A three-image series is generally adequate to image the cervical spine and these views will provide some overlapping. Normal articular processes (facets) should have joint spaces with smooth, rounded articular surfaces. Flaring of the caudal epiphyses, dorsal laminar extension, subluxation, degenerative joint disease and abnormal ossification of the articular processes are all characteristic of CVM [2, 4, 17, 20].
Identification of these findings alone will not diagnose the location of spinal cord compression and a myelogram is required.[20-22]. Myelography is useful to confirm the diagnoses of cervical stenotic myelopathy and to determine the location of the lesion(s), especially when surgical intervention is anticipated. Radiographs should be taken of the cervical vertebrae in the neutral, flexed and extended positions. Interpretation of the height of the contrast column in cervical myelography has been considered the best antemortem test for diagnosing extradural spinal cord compression in horses suspected to suffer from cervical vertebral stenotic myelopathy [2, 17, 21, 28-30]. Interpretation is based on reduction of the dorsal contrast column, with a 50% attenuation considered abnormal, however at the C 6,7 site it may require as little as 20% reduction in total dural sagittal diameter to result in clinical signs of spinal cord compression. Films are initially read by me then independently by the surgeon, followed by our joint review. Interpretation of the myelogram is based in part on the subjective opinion of the individuals performing the studies. A review of the evaluation criteria used for interpretation of myelography indicated that the use of 50% reduction in height of the myelographic contrast column showed a low sensitivity and moderate specificity for diagnosing spinal cord compression due to CVM [21]. Prior to surgery ask the following questions: could the clinical signs in this horse be explained by a compressive lesion at that site and are there other test results that indicate the presence of another disease process that could explain the clinical signs in this horse?