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Plain radiography of the cervical vertebrae can be used to assess the likelihood of cervical stenotic myelopathy in horses with spinal ataxia (Moore et al. 1994), but accurate assessment requires a precise lateral radiograph (Rush 1998), ensuring that the ventral prominences of the transverse processes are perfectly overlying each other. Radiographic obliquity results in indistinct margins of the ventral aspect of the vertebral canal and results in erroneous values for objective measurements. A thorough understanding of the 3-dimensional anatomy of the cervical vertebrae aids in interpretation (Withers et al. 2009).

Cervical radiographs should be evaluated subjectively and objectively. Subjective interpretation is based on examining for presence of 5 characteristic malformations of the cervical vertebrae that include (1) flare of the caudal epiphysis of the vertebral body; (2) abnormal ossification of the articular processes; (3) subluxation/alignment between adjacent vertebrae; (4) extension of the vertebral caudal dorsal lamina and (5) osteoarthritis of the articular processes. Estimating the significance of lesions identified through subjective interpretation can be hard and is based on the clinician’s experience and interpreting the balance of probability. For example, osteoarthritis of (especially the caudal) vertebral articular processes is recognised commonly in normal horses (Whittell and Dyson 1987). Hence recognition of characteristic vertebral malformations is considered supportive in diagnosis at best (Papageorges et al. 1987). Oblique radiographs are helpful in certain circumstances (Withers et al. 2009).

Objective assessment of vertebral canal diameter is more accurate than subjective evaluation of vertebral malformation for identifying young horses affected by CSM but may lead to false negative diagnoses in older horses (Levine et al. 2007). Both inter- and intra-vertebral measurements are used. The sensitivity and specificity of the intra-vertebral sagittal ratio method is approximately 90% for vertebral sites between the third and seventh cervical vertebrae (Moore et al. 1994). In most normal horses, the sagittal ratio exceeds 52% from the third to sixth cervical vertebrae and 56% at the seventh cervical vertebrae in horses greater than 320 kg. The positive predictive value of such measurements is probably higher and the negative predictive value lower, in ataxic horses from countries where conflicting diagnoses remain, however, a prerequisite if surgical intervention is considered a viable option on the basis of severity of signs and the owner’s wishes and expectations. This is because plain standing radiography does not definitively pinpoint the actual site of the compressive lesion(s) (Moore et al. 1994). Note that neck flexion and extension while under anaesthesia are contraindicated if there is evidence of compression on the initial neutral views. Ventrodorsal projections may be attempted in small or young animals, especially in the cranial neck and may demonstrate an asymmetric compressive lesion that might otherwise account for some false negative diagnoses in larger horses.

References