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IS IT REALLY PROXIMAL SUSPENSORY DESMITIS? ROBUST DIAGNOSIS

Proximal suspensory desmitis is a condition that appears to have been diagnosed with increasing frequency over the past 20 years. In the predominantly sport horse population referred to our hospital it is the most commonly diagnosed cause of hindlimb lameness. Diagnosis appears to have become more sensitive with the introduction of an altered approach to regional analgesia, improved techniques for ultrasonographic evaluation and the introduction of advanced imaging techniques.
Clinical signs

The observed signs of proximal suspensory desmitis are very varied. More severe cases present as overt lameness when examined trotting in hand. The lameness is often exacerbated by lunging and has been reported in the past to be worst when lunging on soft surfaces with the affected limb on the outside of the circle. Many cases are bilateral and therefore have a symmetrically short striding gait when examined in a straight line. Lameness is sometimes only evident when the horse is ridden and it is recommended that when assessing cases of poor performance and lack of hindlimb impulsion, that horses are assessed in hand, on the lunge and ridden (or driven) where appropriate. Riders often report a "loss of action/impulsion/performance" or perceived back pain rather than overt lameness in more subtle cases.

Physical examination
Conformation may play a part in the development of proximal suspensory desmitis and influence its prognosis with treatment. A straight hock with hyperextension of the metacarp/tarsophalangeal joint conformation may predispose to the condition and reduces the chance of successful surgical management. It may increase the index of suspicion at the initial examination of the presence of suspensory disease.
Palpation of the limb can be unrewarding, especially in the hindlimb where the deep plantar metatarsal fascia restricts outward expansion of an inflamed ligament in all but the most severe cases. Palpation of the forelimb ligament will often reveal evidence of swelling, and pain can usually be elicited following the application of digital pressure to its origin. Firm palpation may also exacerbate lameness, which can be used as a further investigative tool, similar to performing a flexion test on a painful joint.

Diagnostic regional analgesia
Horses should show little or no response to low four/six point regional analgesia or intra-articular local analgesia of the middle carpal/ tarsometarsal joint. The lameness should be largely or completely abolished following perineural local analgesia of the deep branch of the lateral palmar/ plantar nerve. In clinical cases however the responses are often not as clear-cut as we would like.

Imaging

Radiography
Radiographic changes associated with proximal suspensory desmitis occur as a result of enthesious new bone formation at the origin of the ligament. That appears as increased radiodensity and altered trabecular pattern on dorsopalmar and lateromedial projections and may also be associated with endosteal reaction visible on the latter view.

Furthermore, it is important to look for evidence of small tarsal joint disease, which could also respond similarly to regional analgesic techniques.

Ultrasonography
Ultrasonography remains the mainstay of diagnosis of proximal suspensory desmitis once lameness has been localised with regional analgesia. It should not be relied on without corroboration from radiography and local analgesia unless changes are so severe that regional analgesic techniques are considered unsafe. Standard weight bearing transverse and longitudinal views should be used with a linear 10MHz probe applied towards the medial aspect of the limb and directed dorsolaterally for the transverse scans. If available, a virtual convex setting on the linear probe gives a trapezoid ultrasound beam, which allows greater width to the scan at the level of the suspensory ligament. Evaluation of echogenicity across the ligament is best performed on transverse scans with the sagittal tendinous part most often demonstrating reduced

echogenicity. Fibre pattern is best seen on longitudinal scans. Hyperechogenic regions may suggest the presence of scar tissue, indicative of chronicity and when these occur within areas of reduced echogenicity it provides evidence of an acute exacerbation of a chronic injury.

Recent reports of the use of angle contrast ultrasonographic technique (ACUST) have demonstrated increased sensitivity and specificity when compared to standard ultrasonographic evaluation.

ACUST can be used with the limb weight bearing or flexed but the flexed limb has the advantage that other plantar soft tissues can be displaced and the probe has a broader area of contact with the skin. The probe is also located closer to the suspensory ligament allowing improved image resolution and decreasing artifacts from overlying structures. The probe is angled slightly in a proximodistal plane to create an "off-incidence" image, which highlights the edges of the suspensory ligament, making comparisons of size between limbs and relative to the deep digital flexor tendon easier.

Advanced imaging techniques

Nuclear scintigraphy
Nuclear scintigraphy is a relatively insensitive diagnostic tool for proximal suspensory desmitis, even when soft tissue phases are included in the protocol. The sensitivity can be increased by using region of interest ratios in hindlimbs and the technique has high specificity in the cases that it does detect but further investigation is required to characterize the type and severity of the lesion.

Magnetic resonance imaging
Magnetic resonance imaging (MRI) would probably be the imaging modality of choice if there were no concerns regarding cost or anaesthesia. Standing low field MRI of the proximal suspensory ligament is possible but concerns have been raised with respect to image quality and the difficulty in obtaining images in the standing horse where movement reduces acuity. Several studies have reported the improved sensitivity of MRI compared to other modalities and pathological changes such as increased fluid signal within the plantar cortex of the third metacarpal/ tarsal bone cannot be evaluated using any other modality. It remains a viable option that will be used increasingly as MRI becomes more widely available and image quality and technique improve.

Computed tomography
Computed tomography (CT) gives more structural information on bone but is much less sensitive for soft tissue lesions than MRI and gives no data on fluid within tissues. Sensitivity can be increased by the inclusion of contrast studies. The increased speed of imaging but the necessity for general anaesthesia may influence the development of the technique for effective diagnosis of proximal suspensory desmitis.