Managing Back Pain in the Horse

Lindsey Boone, DVM, PhD, DACVS-LA
College of Veterinary Medicine
Auburn University, Auburn, AL, USA

Horses presenting for back pain will often present for owner complaints of poor or reduced performance manifested as loss of hindlimb propulsion, disunited canter, improper collection, etc. Back pain in the horse can be due to primary or secondary (lameness) problems. The majority of horses with thoracolumbar pain (50-70%) will have concurrent lameness which is why a thorough clinical evaluation including palpation, range of motion exercises, and lameness evaluation is important in the work up of horses with back pain.

CLINICALLY RELEVANT ANATOMY OF THE EQUINE THORACOLUMBAR SPINE

The thoracolumbar spin is made up of eighteen thoracic vertebrae and six lumbar vertebrae. The dorsal spinous processes of the cranial thoracic vertebrae are angled caudally whereas the dorsal spinous processes are angled caudally. Two articular facets are present for each vertebral articulation with cranial articular facet facing cranial and the caudal articular facet facing caudally. The epaxial musculature are a group of muscles that lie dorsal to the transverse processes and include the iliocostalis, longissimus dorsi, and multifidi muscles. The epaxial muscles are responsible for extension and lateral bending of the spine. The hypaxial musculature are the muscles ventral to the transverse processes and are important in spinal flexion and lateral bending.

CLINICAL EXAMINATION OF THE EQUINE PATIENT PRESENTING FOR “BACK PAIN”

A thorough physical and musculoskeletal examination should be performed. Conformational abnormalities of the back (long back, short back, excessive ventroflexion (lordosis), excessive dorsiflexion (kyphosis), etc) should be noted. The topline should be inspected for evidence of muscular asymmetry, swellings/bumps, and white hairs. Range of motion exercises are performed to identify willingness and ability of the patient to perform thoracolumbar flexion and lateral bending. To evaluate flexion of the back, bait (i.e. carrot) is followed by the horse between the forelimbs and hold for a few seconds. To evaluate lateral bending, the horse is positioned next to a wall. Bait is used to entice the horse to laterally bend the neck and thoracolumbar spine to the tuber coxae and hold the bend for a few seconds. Lateral bending is performed such that the horse is encouraged to bend left and right. Unwillingness to perform flexion or lateral bending exercises (to one side or either side) should be added to the clinical picture of the overall assessment of back pain. Palpation of the back is performed, but care should be taken by the practitioner to consider the temperamant of the horse and variability in pain threshold of patients when subjectively assessing the patient’s response. It is important to perform this skill every time a musculoskeletal exam is performed irregardless of the presenting complaint (back pain) for the clinician to have a general understanding of the normal reaction of horses without back pain to similar digital pressure compared to horses with back pain and confirmed pathology of the thoracolumbar spine. Digital pressure is then applied over the midline of the back over each individual dorsal spinous processes along the supraspinous ligament and resistance to pressure is again subjectively assessed by the evaluator. Firm pressure is applied using the palm of the hand along the epaxial musculature from the point of the withers to the sacrum and the resistance to pressure is subjectively assessed by the evaluator. Digital pressure is then applied over the midline of the back over each individual dorsal spinous processes along the supraspinous ligament and resistance to pressure is again subjectively assessed by the evaluator. Induced splinting and presence of muscle spasms are indicators of moderate to severe back pain. An algometer can be used as an objective measure to quantify back pain, but it’s use has not gained popularity.

Following observation and palpation of the thoracolumbar spine, the author prefers to observe the horse in hand and under saddle. In hand, the horse on a straight line on natural footing and firm footing (asphalt). Flexion examinations are performed paying particular attention to flexion of the hindlimbs. The horse is observed at the lunge, ensuring that the horse is asked to canter in both directions. Care is taken to observe the fluidity of the canter and the downward transition to trot. Horses with back pain can be described as suffering from a disunited canter with sloppy transition downward to the trot. After warm up the horse is re-evaluated on the straight line and then the rider is asked to tack up the horse. The author prefers to observe the horse during tack application. Behavior is noted while the saddle pad, saddle is placed and girth is

tightened, taking note of avoidance and/or agitated behavior. The clinician should take the time to observe the general fit of the saddle including points of saddle contact along the withers and thoracolumbar spine ensuring there is enough clearance in the gullet. Behavior is observed while the rider is mounted. The rider is asked to warm the horse up as they would their normal exercise routine. The clinician should pay attention to head carriage and postures adopted by the horse during the ridden exercise that result in extension or flexion of the back. During the rider examination, evidence of saddle slip (asymmetrical shifting of the saddle to the left or right of midline) and rider readjustment of the saddle should be observed. Saddle slip was found to be present in approximately 50% of horses with hindlimb lameness. When the horse is untacked the clinician should observe the sweat pattern along the back for any asymmetry or abnormal pattern that may be indicative of an ill-fitting saddle. If a clinically significant lameness is identified, the lameness should be localized via diagnostic analgesia if possible. If a clinically significant lameness is not apparent and primary back pain is suspected, the author prefers to pursue diagnostic imaging if possible. The author prefers to pursue diagnostic imaging prior to infiltration of local analgesia to confirm identified pathology in it's contribution to back pain.

COMMON PATHOLOGIES ASSOCIATED WITH PRIMARY BACK PAIN IN THE HORSE

Supraspinous ligament Injury

Supraspinous desmitis is usually a cause of sudden onset of back pain. This injury may be found in racehorses and jumpers. The ligament is usually thickened in acute injury above the summits of the dorsal spinous processes and pain is elicited on palpation. Ultrasonographic examination of the ligament aids in diagnosis. Diagnosis is based on regions of increased cross-sectional area and changes in fiber pattern (anechoic or heteroechogenic). The most common location for occurrence of desmitis is T15-L3. Sonographic changes should be interpreted in conjunction with clinical exam findings as abnormalities are common in horses without clinical signs of back pain. The desmitis is treated with rest, local injection of anti-inflammatory or regenerative (platelet rich plasma) products and/or extracorporeal shockwave therapy. Prognosis for suprasinous desmitis is guarded to poor due to a high rate of recurrence.

Impinging or overriding dorsal spinous processes

Overriding or impinging dorsal spinous processes (i.e. kissing spines) (IDSP) is the most common osseous pathology causing back pain in horses. Impingement commonly occurs at the level of T13-T18 but can affect lumbar dorsal spinous processes. Thoroughbred horses and horses used for jumping or dressage have higher prevelance of IDSP. Diagnosis requires a thorough clinical examination and imaging. Many horses without clinical signs of back pain will have radiographic evidence of IDSP. Therefore, the number of dorsal spinous processes and the severity of the radiographic and/or scintigraphic signs support the clinical significance of the pathology in the cause of back pain. Approximately 80% of horses will show short term improvement in clinical signs following injection of corticosteroids within the interspinous ligament of the impinging space. However, 50% of these horses will have return of clinical within 90 days and repeat injections are commonly needed along with other treatments as described below. Horse that has severe pathology or have poor response/failure of medical management should be considered for surgical management of the disease. Surgical management consists of ostectomy of varying portions of the dorsal spinous process (total or partial resection) or desmotomy of the interspinous ligament. Approximately 80% of horses are expected to return to work with good to excellent cosmetic outcomes with partial ostectomy based on the literature and experience of the author. Greater than 90% return to work is reported with interspinous ligament desmotomy up to one year post-operatively, but approximately 50% of horses developed other lameness problems requiring further management. With medical or surgical management adjunctive physiotherapy as described below is very important to maintain muscle development and flexibility of the spine.

Thoracolumbar facet osteoarthritis

Approximately 10-15% of horses with thoracolumbar pain have thoracolumbar facet pathology and facet pathology can be found concurrently with other back pathologies, particularly IDSP. The presence of thoracolumbar facet pathology needs to be interpreted with caution and clinical significance should be guided by findings of the clinical exam and imaging. Ultrasound guided injection can be performed if deemed clinically significant with corticosteroids to aid in medical management along with other medical treatments described below.

DIAGNOSTICS UTILIZED FOR BACK PAIN IN THE HORSE

Studies evaluating horses with and without back pain have identified back pathology in a large percentage of horses without signs of back pain. Therefore, the diagnostic approach to confirm clinically significant back pain involves a multimodal approach to diagnostic imaging and confirmatory infiltration of local anesthetic into the region of interest based on diagnostic imaging to confirm improvement in back pain and performance. However, it should be noted that there is a small percentage of horses with clinically significant back pain without significant imaging findings.

Radiographic examination of the back present's certain challenges to the ambulatory practitioner. Some newer digital radiographic systems can get diagnostic images of the dorsal spinous processes in smaller horses. The horse should be sedated. The horse is positioned in a square stance with a neutral head position. The beam is oriented horizontal to the spine to obtain lateral radiographic projections of the vertebral column and the dorsal spinous processes. If abnormalities of the articular facets is suspected, the beam should also be directed 20° ventral to dorsal to obtain oblique projections of the veretebral column, offsetting the articular facets for interpretation. Radiographic findings consistent with overriding dorsal spinous processes include close or overriding position of the dorsal spinous processes, subcortical sclerosis, osteolytic cyst like lesions, enthesiophytes, and focal periosteal reaction

Ultrasonographic imaging is increasingly popular, but as with radiographic imaging, findings need to be interpreted with caution considering the clinical examination. Ultrasound is performed with a standard 7.5-10 mHz linear transducer and 3.5-5 mHz curvilinear transducer to evaluate the supraspinous ligament. This ligament has a linear, echogenic appearance like tendon, but inconsistency in the fiber pattern without associated desmopathy have been identified. Any enlargement and/or changes in echogenicity (mixed echogenicity or anechogenicity) may confirm clinically significant desmopathy of the supraspinous ligament. The dorsal spinous processes can be evaluated for their closeness to aid in diagnosis and or injection of overriding dorsal spinous processes. The 3.5-5 mHz transducer is used to evaluate the cross-sectional area of the epaxial musculature, particularly the multifidus muscle (comparing left to right) and to evaluate the articular facets. Symmetry of the articular facets is compared left to right and any bony irregularities may be indicative of articular facet pathology.

Nucelar scintigraphy is recommended as an adjunctive diagnostic modality to radiographs and ultrasouond in horses with back pain. Increased radiopharmaceutical uptake at the dorsal spinous processes and/or articular facets needs to be interpreted with radiographic and ultrasonographic imaging in mind along with clinical examination findings.

A horse with abnormal radiographic and nuclear scintigraphic findings with clinical examination findings consistent with back pain is highly suggestive of pack pain necessitating treatment. Conformation of local anesthetic into the affected muscle belly, interspinous ligament of impinging spinous processes, or articular facet may be warranted for further confirmation. If local anesthesia of these regions is to be performed, ridden examination is recommended for a minimum of 20 minutes post-infiltration to make conclusions on the response to local anesthesia. If the gait and/or behavior of the horse is improved as assessed by rider and clinician, treatment of the anesthetized structure is recommended.

TREATMENT OF BACK PAIN IN THE HORSE

There are several treatments available and utilized by practitioners for the back. Not all horses will respond the same and the treatment plan need to be tailored to the clinical examination and diagnosed pathology of each horse. With acute back pathology, a course of non-steoridal anti-inflammatories with a period of rest and/or progressive exercise program. Muscle relaxants, such as methocarbamol can be used to reduce muscle spasm, but effectiveness is variable. Exercise regimes for horses with thoracolumbar pain should focus on exercises to improve flexion of the spine. Recommended exercise regimes usually recommend work on the lunge allowing unweighted warm up/loosening of the back and hindquarters. The use of a pessoa during lunge work to encourage spinal flexion further loosening the back is encouraged. When the clinician feels that there has been enough improvement in the clinical signs to allow ridden exercise, lunging warm up in a pessoa is still encouraged followed by ridden work. Ridden work is performed with canter work placed earlier in the work out regime to allow further "loosening" of the lumbar muscles. Local injection of corticosteroids for IDSP or articular

facet pathology may be warranted. Radiographic guidance is used by the author to direct proper insertion of a spinal needle in the impinging spaces of the spine. Ultrasound guidance is used for articular facet injection. Horses are rested for one week following injection and reintroduction of exercise begins with lunging exercise in pessoa. Extracorporeal shockwave therapy providing microtrauma initiating tissue healing and analgesia can be performed for 1-3 or more treatments approximately 2 weeks apart. Bisphosphonate therapy may also be considered in horses with IDSP or articular facet pathology. Alternative therapies including mesotherapy, acupuncture, and spinal manipulation therapy can be added to the therapeutic plan of horses suffering from back pain.

References available upon request from Lindsey Boone at lhb0021@auburn.edu