Dismiss the Kiss!
Understanding Kissing Spines and How You Can Help Your Horse

By Jessica Zeiger, DVM (Class of 2018)
Edited by Stephen B. Adams, DVM, MS, Dipl. ACVS

Overriding Dorsal Spinous Processes (ORDSP), or “Kissing Spines” as it is commonly called, is an occasional cause of back pain in horses. Seen predominantly in sport horses, it has become common practice to ask for vertebral radiographs as part of the pre-purchase examination of horses used for practices such as dressage or jumping. Equine practitioners and owners alike need to understand the diagnosis, treatment options, and preventative measures for this condition in order to best help these horses perform comfortably.

The true underlying cause of kissing spines is not completely understood. Individual vertebrae of the back of horses have an upward projection called a dorsal spinous process (DSP). In horses with kissing spines, two DSPs may touch each other in one or more places along the spine. This causes inflammation, back pain, and spasms of the muscles of the back, drawing these spines even closer together. The most common site of this impingement is at the 15th thoracic vertebra, which is a vertebra where there is an increased rotational motion compared to other vertebrae. The saddle also sits over this vertebra, potentially contributing to the lesion. While we do not know what causes the DSPs to impinge on each other initially, it is known that weakness of the back and core muscles contribute, as do poor saddle fit and poor equitation.

Some horses function well with kissing spines without showing any clinical signs. If it is discovered incidentally or during a pre-purchase examination in a non-painful horse, it should be considered as a predisposition for possible future back pain, but not necessarily an immediate problem. Preventative measures and exercise regimens can be followed preemptively, but horses should only be treated for kissing spines if they become painful.

Horses with back pain may show a variety of signs which include, but are not limited to, lameness, gait abnormalities, decreased flexibility turning to one side, high head carriage, refusal to take correct leads, saddle or rider avoidance, rearing or bucking, and refusal to take jumps. There are many causes of back pain, and your veterinarian should thoroughly evaluate your horse to elucidate all contributing factors to the pain. Kissing spines can be easily diagnosed by taking radiographs of the dorsal spinous processes and looking for areas of contact or impingement between DSPs. Other imaging modalities found to be useful include nuclear scintigraphy and thermography.

(continued on page 2)
Kissing Spines (continued from cover)

A newer, much less invasive surgery is now available, called the Interspinous Ligament Desmotomy (ISLD), which can be performed in a standing, sedated horse. This approach involves making a small incision and cutting the ligament between two spines, eliminating the pain from the nerve endings where the ligament attaches to the DSP and allowing for a widening of the space between the DSPs. The ISLD is 24 times more likely to result in long term correction than the corticosteroid injections and has a low recurrence rate.

Following ISLD, as with all techniques, a rehabilitating exercise regimen is needed. Horses who have undergone ISLD can be fully rehabilitated within 6 weeks, compared to 3-4 months with spinal processes resection. The faster rehabilitation, lower complications, low cost, non-invasiveness, and high success rates of the ISLD have made this procedure a first-choice treatment for many clients and practitioners.

Several recent publications describe another procedure, the subtolar osteotomy of the dorsal spinous process. These surgeries are done standing and may be used in horses in which the ISLD is not successful, or can be used as a primary treatment for horses not responding to injections.

When faced with a diagnosis of kissing spines, it is important to be informed about the nature of the condition, the treatments available, and what you can do to best help the horse be successful. Remember that not every horse with kissing spines is painful. If the horse requires treatment, there are many options available, but none will be successful without a long-term commitment to physical therapy and rehabilitation.

The best way to prevent kissing spines is proper equitation and understanding the importance of proper athletic training, and utilizing innovative treatment options when needed, we can help our horses dismiss this kiss!

References:
THO – Oh No!
Temporalhyoid Osteoarthropathy in the Horse

By Julie Goodman, DVM (Class of 2018) – Edited by Tim Leschun, BVSc, MS, PhD, Dipl. ACVS

Temporalhyoid osteoarthropathy (THO) is a disease of the hyoid apparatus in the horse, first reported in 1983. The hyoid apparatus is made up of four paired bones (the stylohyoid, epihyoid, ceratohyoid, and thyrohyoid) and one unpaired bone (the basihyoid); it is located in the throatlatch region and helps to stabilize the larynx, pharynx, and tongue. The hyoid apparatus is connected to the skull by the temporohyoid joint, an articulation between the stylohyoid bone and the temporobone of the skull. THO is caused by ankylosis, or fusion, of the temporohyoid joint, which can then progress to fracturing of the stylohyoid or temporal bone.

It is unknown what exactly precipitates the ankylosis of the joint, but there are many theories. Inflammation caused by otitis media or otitis interna (infection of the middle or inner ear) may cause enough local inflammation to induce osteoarthrosis and fusion of the joint. It is also possible that infection from a distant site in the body reaches the temporohyoid joint through the bloodstream. Trauma from events such as passing naugostic tubers or rough manipulation of the tongue may set the joint up to develop a nonseptic degenerative process. However, owners of horses with THO usually do not report any trauma or infection. THO may be a primary degenerative joint disease, but no other joints are affected.

Symptoms due to osteoarthropathy of the temporohyoid joint include difficulty eating, pain around the ear base, head shaking, and acting out under saddle. If fractures occur, this can result in edema and hemorrhage leading to compression of the nearby nerves or direct tearing or stretching of the nerves. Vestibulocochlear nerve damage manifests clinically as vestibular signs, ranging from a head tilt and mild ataxia to recumbency. Signs of facial nerve damage include drooping of the ear, drooping of the upper eyelid, and muzzle deviation. Because the facial nerve is responsible for blinking of the eye, keratoconjunctivitis sicca, or dry eye, and corneal ulcers can also result.

Horses suspected to have THO should have a complete neurologic exam performed by their veterinarian. The gold standard for diagnosis is endoscopy of the guttural pouch, which will reveal enlargement of the top of the stylohyoid during the temporo-hyoid joint. Radiographs are less sensitive than endoscopy and may not be conclusive as a diagnostic test. A CT scan can also detect fractures or disease of the middle ear. MRI can reveal additional information, such as fluid accumulation or structural changes of the parts of the inner ear, which help determine prognosis. Administering local anesthesia in the external ear canal can help differentiate whether the condition is unilateral or bilateral. Brainstem auditory-evoked response testing (BAER) will reveal partial or complete hearing loss. Tympanocentesis, or aspirating fluid from the eardrum, can identify potential bacteria and help determine proper antibiotic usage.

Treatment goals for THO include decreasing inflammation, treating possible otitis or secondary infections, treating secondary eye ulcers and dry eye, performing surgery to remove pressure from the temporohyoid joint, and avoiding further trauma such as ear rubbing, passing a nasogastric tube, and dental floats. Anti-inflammatory (flunixin meglumine, dimethyl sulfoxide) should be administered for 1-2 weeks. If the horse has severe vestibular signs, the corticosteroid dexamethasone can be given to further assist in decreasing inflammation. There is no consensus on antibiotic treatment, but antibiotics effective against Staphylococcus aureus can be given for 2-4 weeks. Gabapentin can be administered to help with neuropathic pain control. Standard treatment for ulcers is indicated if corneal ulcers are present. In cases of facial nerve dysfunction, temporary tarsorrhaphy (suturing part of the eyelid closed to protect the cornea) may be indicated. Originally, temporohyoid osteoarthropathy was treated surgically with removal of part of the stylohyoid bone, but partial disease recurrence was seen frequently with this method due to bony healing along the gap of resected bone. The surgery of choice to treat THO is a ceratohyoidectomy, in which the ceratohyoid bone and its connection between the basihyoid and stylohyoid bone is removed to relieve pressure and tension on the temporal bone. Decreased pain has been noted in horses 24-48 hours after this procedure and the bone does not tend to heal back.

The cornea is the outermost layer of the front of the eye and functions as the first line of defense against any foreign material entering the eye. Since the cornea is exposed to the environment, it is very susceptible to irritation, abrasions and foreign bodies. Horses are notorious for hitting their eye on anything they can find such as a broken water bucket clip, loose piece of fencing, broken boards in the stall or nails sticking out in their environment that can lead to a corneal ulcer.

The cornea itself is about 1 millimeter thick, and composed of several layers. Corneal ulcers occur when the outermost layer of the cornea is disrupted. You should suspect a corneal ulcer in your horse when you see excessive tear production and runny eye, squinting, or a red or swollen eye. If you see any of these symptoms, you should contact your veterinarian immediately to come evaluate the eye. In order to diagnose a corneal ulcer, your veterinarian will need to apply a stain to the eye. If an ulcer is present, this stain will be taken up by the layer of the cornea below the epithelium called the stroma, and will appear as a bright green spot on the eye.

There are multiple types of corneal ulcers that vary in severity and the way they are treated. One of the most important aspects of corneal ulcer care is to never treat them with steroid medications such as ointment that contains dexamethasone, as these suppress the body’s immune response and can result in infection or worsening of already present infection. Ulcers can vary in their depth into the cornea, and can be non-infected, infected or “melting.” A shallow, non-infected ulcer can usually be treated with topical antibiotic medications, atropine and Banamine at home. Atropine is used in the treatment of corneal ulcers to dilate the eye and prevent painful spasms of the ciliary body within the eye. Banamine is administered for pain relief. Small, non-infected ulcers often heal within 7-10 days when treated and identified quickly.

An ulcer that penetrates deeper into the cornea or is infected is significantly more difficult to treat and requires hospitalization with advanced medical interventions. These horses often require eye medication administered every hour or two hours for multiple days. To facilitate ease of treatment and ensure medications are reaching the cornea, a subpalpebral lavage system can be placed. A “SPL” (subpalpebral lavage) is a small, long catheter that is placed through your horse’s upper or lower eyelid to deliver medication directly onto the eye. The catheter is anchored to your horse’s forehead with a few stitches, and weaved through the mane for further security. Small amounts of liquid antibiotics, antifungals and other medications can then be administered through the small catheter port tied in your horse’s mane, instead of attempting to place ointment in a moving target twelve or more times a day. A melting corneal ulcer occurs when the bacteria in an infected ulcer release enzymes called collagenases that cause the the cornea to break down and appear goozy. This is a severe condition, and requires a SPL in addition to treatment with anti-collagenase containing products on top of antibiotics, atropine and Banamine. Melt ing ulcers may also require surgical intervention to allow for complete healing. The most severe and urgent form of corneal ulcer is one that is so deep there is only a single layer of cells preventing the eye from rupturing. This type of ulcer is termed a descemetocoele, and even small non-infected corneal ulcers can progress to this severity if not correctly identified and treated.

(continued on page 7)
Rain Rot? Surely Not!

By Audriana Finney, DVM Student (Class of 2019)

Edited by Stacy H. Tinkle, DVM, MPH, Dipl. ACVIM

It’s the beginning of spring, flies are starting to reappear after a long winter and the rainfall has been plentiful. The weather is warmer and you have your horse turned out in the pasture with a run-in shed; but he also enjoys standing out in the rain. Today the rain has finally decided to let up and you decide to go for a nice trail ride. You go to get your horse from the pasture and you notice the hair coat on his rump looks kind of bumpy and tufted. Your horse may have a case of rain rot or rain scald.

Rain rot is caused by the bacteria, *Dermatophilus congolensis*. This organism requires two factors to be successful and proliferate: skin damage and moisture. The skin damage can be from a small cut obtained while at pasture or from biting flies while the moisture can be from sweat not properly groomed off after a long ride or chronic rain exposure. Dermatophilosis can be passed on from one horse to the other via the crusts produced from these lesions. As previously stated, these lesions look like tufts of hair and are sometimes referred to as looking like paintbrushes (Figure 1). If these clumps of hairs are plucked off, the underneath skin can have pink areas of irritation, or in more severe cases, a thick creamy pus (Figure 2). When these lesions heal, it may appear as areas of hair loss or scaling of the skin. Rain rot does not just develop on the rump of horses, but can be found in the saddle area, nose and legs (Figure 3). Dermatophilosis is rarely transmitted to people and mainly in tropical areas. If you suspect your horse has rain rot, there are multiple ways a true diagnosis can be obtained. The crusts produced from this infection can be used to perform a cytology and culture. These diagnostic methods can help differentiate from similar diseases such as those caused by ringworm or mange.

The environment your horse is living in will greatly affect the management of rain rot. For example, horses living in a more humid climate will be more difficult to manage than a horse living in a cooler, drier environment. If horses with rain rot are kept in a dry environment for 4 weeks, then most of these cases will actually regress on their own and no treatment will be needed. More proactive treatment involves removal of the crusts followed by application of topical treatments. In more chronic infections, systemic therapy with antibiotics can be used. Common topical products utilized are 2-5% lime sulfur dip or 4% chlorhexidine solution applied to the affected areas for 3-5 days. These products can come in either entire body shampoos or dips to be applied and left on the skin. Once the lesions are clearing up in a specific area, the topical products can be used weekly until the lesions have completely disappeared. Penicillin and trimethoprim sulfonamides are antibiotics that have been successful in treating chronic infections. Research has been conducted revealing different methods of treating *D. congolensis*. In a study by Valipe et al. (2009), it was found that caprylic acid, a fatty acid, is a potential alternative treatment option for rain rot. This could be an important therapeutic option as it eliminates the use of antibiotics and the concern for the development of antimicrobial resistance.

If your horse exhibits any signs associated with temporohyoid osteoarthropathy, contact your veterinarian right away. Many of the earlier signs are often associated with dental issues, but keep in mind this lesser known disease process has a much better chance for a full recovery for your horse.

Corneal Ulcers (continued from page 5)

Corneal ulcers are one of the most common conditions of the eye in horses. It is important to remember that although some ulcers can be treated at home, all suspected ulcers need to be evaluated by a veterinarian and many require advanced medical treatment and hospitalization. If you have questions about equine corneal ulcers or other medical conditions, please contact your veterinarian today.

References:

If you have trouble accessing this document because of a disability, please contact PVM Web Communications at vetwebteam@purdue.edu.
The Equine Sports Medicine Center

Purdue’s Equine Sports Medicine Center is dedicated to the education and support of Indiana horsemen and veterinarians through the study of the equine athlete. The Center offers comprehensive evaluations designed to diagnose and treat the causes of poor performance, to provide performance and fitness assessments, and to improve the rehabilitation of athletic horses. Other integral goals of the Center are to pioneer leading-edge research in the area of equine sports medicine, to provide the highest level of training to future equine veterinarians, and to offer quality continuing education to Indiana veterinarians and horsemen. For more information visit our website:

www.vet.purdue.edu/esmc/