Pain Recognition and Management in Horses | News | Merck Equine

Pain Recognition and Management in Horses

By Earl Gaughan, D.V.M., Dipl. ACVS

No one wants to see their horse in pain. It is hard to believe, with our modern understandings, that there was a time when people didn't believe animals could feel pain, or believed that pain should not be treated because experiencing pain might actually help the horse.

Experts and veterinarians now agree that animals experience pain and that the debilitating aspects of pain should be treated. While recognizing pain as a reality for horses, it is important to also understand that the pain a horse experiences cannot be calibrated the same as a human's, because our brains have different levels of development. It is also important to understand that our strategies for managing pain in horses differ from humans for several important reasons. For one, horses are not the best managers of their own rehabilitation. For instance I haven't seen a horse, yet, willing to rest in a recliner.

What is Pain?

Scientifically, a working definition of pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage" has been proposed by the International Association for the Study of Pain. They also recognize that, "the inability to communicate in no way negates the possibility that an individual is experiencing pain and is in need of appropriate pain relieving treatment," which certainly applies to horses.

The ability to experience pain has some advantages. Pain may limit movement of an injured body part, which can assist healing. In the past, this prompted some to argue against treating an animal to reduce pain. Having a painful experience may also help an individual learn to avoid harmful stimuli in the future. However, properly treating and managing the source(s) of pain can be important to overall healing and rehabilitation as a horse recovers from an injury or disease.

Is My Horse in Pain?

Our horses may not be able to verbally tell us they are in pain, but most horse owners know when something is not right because they are familiar with their horse's normal behaviors. In some cases, it is easy to observe that a horse is experiencing pain. However, in other cases, it may not be as obvious. Horses differ in their tolerance of pain and in their outward signs of pain. While horses tend to be consistent and respond similarly to similar situations, there are times when one horse will react very differently from another horse to the same injury or experience.

Individual pain tolerance and how a horse shows us pain may also vary based on such factors as the horse's age, previous experiences and environment. Some non-painful stimuli, such as anxiety and fear, may also cause similar signs as pain, making recognition of pain in horses a challenge. Here are some classic signs to look for:

- Elevated heart rate
- Elevated respiratory rate
- Sweating unexpectedly
- Dilated pupils
- Behavioral changes – a docile horse may become agitated
- Ear position – ears partially or fully back (not necessarily pinned) may be an indication of discomfort
- Lameness, changes in movement
- Visceral signs (colic) – pacing, rolling, pawing, or kicking at their sides

So, it is highly recommended that you be familiar with your horse's normal and regular behaviors.

Classifying Pain

There are several classifications or observation systems that can help us understand the pain a horse may be experiencing. These descriptive systems are based on a variety of criteria, including duration, location, intensity or origination. Because pain is a complex multidimensional reality, classifications and interpretations of severity can help determine the best management protocols available based on current treatment options.

Pain can be classified by whether it involves certain tissues, like superficial structures (e.g., skin), the musculoskeletal system (e.g., muscle, tendon, bone) or visceral tissues (e.g., intestines). Examples of pain of the musculoskeletal system include osteoarthritis, laminitis, navicular disease and a bowed tendon. Colic is the most common clinical sign of pain that originates in the intestines or abdomen.

Pain is also classified as to its duration, normally either acute or chronic. Pain is typically classified as chronic if it has been present for more than three months. Acute pain is most often considered of recent onset, as from an injury or sudden start of colic signs. Successful management of acute pain can help reduce the intensity and duration of chronic pain. More on that shortly.

The intensity of how pain is demonstrated by a horse is another way that pain can be classified. Mild pain may be difficult to detect in many horses. Moderate and severe pain may be easier to identify because the outward signs are easier to recognize. Methods of identifying facial cues (e.g., Horse Grimace Scale) may make it easier to detect even mild pain.

Pain Management

One of the most common origins of pain is the normal body response of inflammation. Inflammation is part of the body's normal response to injury and disease, and also is an important part of tissue healing mechanisms. When pain associated with inflammation becomes debilitating for a horse, substantial negative events can occur.

The hallmarks of inflammation are pain, heat, swelling and redness. Inflammation can result in pain in several ways, including the release and presence of chemical mediators (like prostaglandins), which is normal after tissue is damaged. Blocking or inhibiting the production of these chemicals by using non-steroidal anti-inflammatory drugs (NSAIDs) is one strategy used to moderate inflammation and manage acute or chronically active pain.

Management of pain generally includes a variety of strategies and therapies and is dependent on many factors, including whether the pain is acute or chronic.

<u>Short-Term Strategies – Acute Pain</u>

Acute pain is of short duration and is generally due to a sudden illness or injury. Examples could include a tendon injury, being kicked by another horse or the abdominal pain of a sudden colic episode. It also includes pain associated with surgical procedures. The treatment goal is to keep the horse comfortable while it recovers and minimize the risk of additional health problems caused by any acute pain.

Early, effective treatment and control of acute pain can reduce the likelihood of transitioning into a state of chronic pain. Successful treatment of acute pain stimuli can also help avoid what is known as the "wind-up effect." This wind-up phenomenon can occur with continuous, ineffectively treated pain such that the presence of pain becomes more and more difficult to manage. Increased and additional medications may be needed, yet become unsuccessful, when confronting these situations.

"Early recognition of pain, and establishing a diagnosis of the source of that pain, allows a veterinarian and owner to employ the best medical options for a horse before the pain becomes less likely to respond to treatment," says Melinda Story, D.V.M., Dipl. ACVS, Dipl. ACVSMR, an Assistant Professor in the College of Veterinary Medicine & Biomedical Sciences at Colorado State University. "This can allow more specific use of pain management techniques which can help reduce overall drug use."

First aid for an acute injury may include ice, rest, medications and bandages. As part of the first-aid plan, and afterward, pharmaceutical management is probably the best known strategy to manage acute pain and inflammation. The goal of medical management is to provide pain relief but maintain the horse's protective behaviors. For example, it's important not to mask pain that has a protective mechanism (e.g., limb fracture). Medical care should not make the situation more dangerous for the horse or the owner.

There are several drug classes that are often considered depending upon the type and severity of pain. Acute pain associated with colic, for example, often responds well to the NSAID flunixin meglumine (Banamine®), the synthetic opioid butorphanol (Dolorex®) and systemic alpha-2 agonists like xylazine or detomidine, both of which have profound sedative and pain relieving effects in horses.

<u>Long-Term Strategies – Chronic Pain</u>

Chronic pain persists for extended periods of time and may not be directly associated with a single contributing event. Examples include osteoarthritis, chronic laminitis and navicular disease. Performance horses often experience chronic pain due to the wear and tear of training and competing at a high level.

NSAIDs are commonly and successfully used to manage chronic pain. Phenylbutazone (bute) is an NSAID often used for long-term pain management because it works well for musculoskeletal inflammation and pain, and is cost effective. Properly managed dose and frequency of use can minimize concerns for any NSAID use. Guidance and regular consultation by your veterinarian is the best way to use this family of medications. Horses that eat and drink normally typically do well on bute. However, horses with known gastric ulcers may do better on an NSAID like firocoxib.

“A horse that experiences chronic pain requires careful management and attention to total daily, and cumulative, use of drugs like the NSAIDs,” says Dr. Story. “Attention to nutrition, exercise control and pain management techniques must fit together to reduce the stresses on a horse that is already experiencing pain. There is no better team to produce the best care for a horse than the owner and the veterinarian monitoring daily care, response to treatment, and then producing the best long term plan.”

Most horses tolerate NSAIDs quite well; however, as with any drug, these products should be used and monitored appropriately. Horses with known sensitivities to NSAIDs may do well with alternate pain management protocols, which may involve nutritional and behavioral adjustments, as well as complementary and alternative therapies such as acupuncture, massage, chiropractic care or shock wave therapy.

“The integrative therapies of acupuncture, chiropractic medicine and others are often used in concert with traditional medical, or pharmaceutical, approaches for horses with acute and chronic pain,” adds Dr. Story, who is also certified in veterinary acupuncture and chiropractic medicine. “Combining these therapies has often resulted in reduced pain medication use (i.e., NSAIDs) and can assist a long-term pain management plan when necessary.”

There are also local and regional treatment options that your veterinarian may recommend for reducing inflammation and enhancing healing. If the exact location of the horse’s musculoskeletal pain is known, diclofenac (Surpass®) is an NSAID that can be applied topically. For joints and other synovial locations, inflammation and pain

management may include hyaluronate (e.g., Legend®), polysulfated glycosaminoglycan (e.g., Adequan®), stem cell therapy and other biologic therapies (e.g., Interleukin Receptor Antagonist Protein (IRAP), Platelet Rich Plasma (PRP)), as well as steroid injections.

Every horse is different and will require an individualized pain management approach designed by your veterinarian.

Concluding Thoughts

While it is impossible to ask equine patients to put their feet up and relax until an injury is healed or pain is gone, there are many options for effectively managing pain in horses. You are in the best position to evaluate your horse's level of pain, because you are most familiar with his normal behaviors and habits. If you notice something is off with your horse, it is important to let your veterinarian know as soon as possible. A team approach to care is the most effective means for managing inflammation and pain and helping to get your horse back on the road to recovery.

Common Drug Classes Used for Pain Management in Horses

Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)

Common NSAIDs include phenylbutazone, flunixin meglumine, aspirin, meloxicam and firocoxib. When tissue is damaged or injured many types of chemicals are released. Some of these chemicals (prostaglandins) lead to pain and inflammation while others are required for reparative purposes. Cyclooxygenase (COX) enzymes inhibit the production of prostaglandins, reducing pain and inflammation. COX-1 is primarily involved in normal body functions, such as production of protective gastric mucus, while COX-2 is involved in pain and inflammation. NSAIDs may be general (nonselective) COX inhibitors or may be selective for one of the COX pathways. Proper management and dosing will minimize concerns for the non-selective NSAIDs. Although some pain treatments can be used concurrently, others can be dangerous when used together. NSAIDs should not be used in combination with other NSAIDs.

Corticosteroids

Corticosteroids are effective anti-inflammatory agents, and some may help play a role in some pain management scenarios. Some corticosteroids are very short-acting while others have a longer duration of action. In the case of arthritis, corticosteroids are sometimes injected directly into the inflamed joint. Examples of these drugs are triamcinolone and betamethasone.

Systemic Opioid Drugs

Morphine is a classic pain control drug that has limited use in horses. It has a short duration of action. Concerns about reducing gastrointestinal motility may limit its use. Butorphanol is a synthetic opioid that has fewer side effects than morphine. It is often used for the relief of pain associated with colic and for pain after surgery.

Systemic Alpha-2 Agonists

Systemic alpha-2 agonists such as xylazine and detomidine provide profound sedation and, as a result, some secondary pain relief. They are often used for standing chemical restraint such that procedures can be conducted on a quiet, cooperative, immobile horse.

Systemic Nonconventional Drugs

Ketamine is a dissociative (class of hallucinogen) general anesthetic agent which is often given with an alpha-2 agonist. Low doses of ketamine prevent the upregulation of neuronal pathways which may prevent the wind-up effect. Gabapentin is another drug that helps prevent the wind-up phenomenon of pain. It is used to treat neuropathic pain or pain caused by damage to the peripheral nerves or to the spinal cord. These types of drugs are often used for management of chronic, potentially debilitating pain in horses.

About the author

Earl Gaughan, D.V.M., Dipl. ACVS, is an equine professional services veterinarian with Merck Animal Health. He received his doctorate of veterinary medicine from the University of Georgia and his equine surgery residency at New York State College of Veterinary Medicine, Cornell University. Dr. Gaughan has extensive experience in both the classroom and field. He is a board-certified surgeon and has authored numerous research articles and book chapters.