

Health News Release

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NC STATE VETERINARY RESEARCHERS DISCOVER NEW ADVERSE EFFECTS ASSOCIATED WITH SYSTEMIC USE OF NSAIDS IN HORSES

Horse owners urged to use pain medications wisely

RALEIGH, N.C., November 19, 2004—Non-steroidal anti-inflammatory drugs (NSAIDs) are the cornerstone of treatment for many painful conditions in horses, including arthritis, laminitis, and colic. Although these drugs are an important component of therapy for these disease syndromes, overuse and misuse of NSAIDs can result in gastrointestinal injury, kidney damage and even death in horses. Researchers at North Carolina State University's College of Veterinary Medicine have investigated these drugs in horses with colic-related intestinal injury. This research has uncovered previously unknown adverse effects: NSAIDs actually retard healing of damaged gastrointestinal tissue.

NSAIDs are among the most frequently-used and relied-upon medications in equine medicine. Available in tablet, paste and injectable formulations, their use has been extremely important in the treatment of painful conditions in horses for much of the last 25 years. For example, Butazolidin® (phenylbutazone), commonly known as 'bute,' and Banamine® (flunixin meglumine) have dominated the treatment of colic and lameness respectively, although newer NSAIDs such as ketoprofen and naproxen have also been used extensively for these conditions. However, because these drugs are absorbed systemically and are transported throughout the body via the bloodstream, they reach unintended targets where they can have adverse effects. Specifically, there is increasing evidence that two organ systems are particularly susceptible to these drugs: the gastrointestinal tract and the kidneys.

Known adverse effects of systemic NSAIDs

It is now widely recognized that NSAIDs can cause side effects in the gastrointestinal tract, such as stomach ulcers and on rare occasion, potentially fatal conditions such as colitis (severe inflammation and injury of the colon). The kidneys may also suffer damage from these drugs, particularly when horses are dehydrated. Although studies have shown that these complications may be caused by excessive doses of NSAIDs, some horses develop adverse effects when given normal doses. For example, in one study reported by Dr. Noah Cohen at Texas A&M University, five horses evaluated for intermittent colic were found to have right dorsal colitis when taken to surgery, and all had been on normal dosages of phenylbutazone from 5-30 days. In other studies, excessive doses of phenylbutazone have been shown to induce a range of adverse effects within

a relatively short period of time, including gastric ulcers, colitis, and kidney damage. Therefore, although a uniform recommendation can be made about careful dosing of horses according to the labeled instructions, owners also need to be aware of the possibility of complications even when they follow these directions. Other factors, particularly dehydration, should alert owners to be especially cautious about administration of even low doses of NSAIDs.

New research raises additional concerns

Recent research conducted by Dr. Anthony Blikslager, associate professor of equine surgery, has yielded surprising results and highlights the complexity of NSAID use. Eight horses with intestinal injury of the small intestine were treated with Banamine®, which is very beneficial for controlling pain and reversing some of the systemic effects of absorption of bacterial toxins from the damaged intestine. Surprisingly, the drug slowed down the intestinal repair process as compared to horses which received no Banamine®, although Banamine® did improve the comfort level of the horses. (None of the horses showed colic signs as they all received the alternative narcotic pain medication butorphanol, trade name Torbugesic®.) Banamine® stopped the intestinal lining from re-sealing for at least 18-hours, which could result in increased endotoxin absorption. According to Dr. Blikslager, “This effect was unexpected because Banamine® is used for its ability to reduce the clinical signs of endotoxin absorption. Now, we need to assess the clinical importance of these findings, and look at safer drugs in the NSAID class.”

New diagnostic methods

While ulcers can cause subtle changes in a horse’s performance, the adverse effects caused by NSAIDs can be quite difficult to detect, so owners and veterinarians need to monitor horses closely during administration. Fortunately, new diagnostic tests are becoming available that can help veterinarians detect problems early. Dr. Sam Jones, associate professor of equine medicine at North Carolina State University’s College of Veterinary Medicine has worked with new diagnostic methods that are paving the way for early detection of problems. “Our awareness of the presence of stomach ulcers has increased dramatically with the availability of new endoscopes that are long enough to reach into the stomach,” notes Dr. Jones. “Ultrasound technology similar to that used to scan tendons has been effective in detecting early evidence of colitis. This allows at-risk horses to be monitored closely before a major problem occurs, and the technology can also be used to monitor the recovery process in horses with on-going colitis.”

What can horse owners do?

When using systemic NSAIDs, horse owners should make sure that they use these drugs in the safest manner possible. “The overall goal of pain management therapy should be to use these

drugs at the lowest possible dose for the shortest time possible,” said Dr. Blikslager. “We find that sometimes owners use these drugs in an effort to prevent a problem or to improve a horse’s performance without realizing the potential adverse impact to the horse’s health.”

Unfortunately, there are few outward signs of the initial adverse effects caused by systemic NSAIDs. However, if a horse is being treated with a systemic drug like bute for lameness, and becomes uninterested in food and depressed, gastrointestinal damage could be the reason. The next level of severity would involve episodes of colic or diarrhea. Evidence of any of these findings requires immediate veterinary consultation. The veterinarian may be able to give advice over the phone, but more severe clinical signs warrant immediate attention. Treatment may be as simple as reducing the dose of the NSAID, or taking the horse off NSAIDs completely. More intensive testing at a referral center, involving blood analyses, endoscopy and ultrasound may be required to determine the cause of the problem. Above all else, owners should closely follow the instructions provided by their veterinarian, and immediately alert their veterinarian if they think their horse has a problem associated with systemic NSAID administration.

Summary

It is important to note that systemic NSAIDs can be used very successfully, to the point where some horses with chronic lameness receive bute for extended periods of time, typically at a dose such as 1 g once daily. However, even in these horses, it is worth considering giving horses time off from treatment, such as treating only before and after strenuous exercise on a limited number of days per week, or taking the horse off bute periodically to allow organ systems such as the gastrointestinal tract and kidneys to recover.

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