VM177

UF UNIVERSITY of FLORIDA
IFAS Extension

Colic in Horses[1]

Amanda M. House[2]

What is Colic?

Colic is the number one cause of death in horses, excluding old age. The good news is that the vast majority of cases are mild and resolve with medical treatment. Although most horse owners hope to never have to think about it, understanding what colic is and adopting strategies for its management and prevention are an important part of responsible horse ownership and management. The USDA's National Animal Health Monitoring System published the results of a 1998 study on equine colic which determined that the incidence of colic was 4.2 events for every 100 horses per year, that 1.2% of colic cases will require surgery and that 11% will be fatal. The cost of colic was estimated to be $115 million in 1998, and that has certainly increased in the last 10 years. So what is colic?

Colic is a clinical sign of disease, but is not actually a disease itself. Colic is defined as any abdominal pain and can come from any abdominal organ, not just the gastrointestinal tract. Abdominal discomfort from liver or kidney disease will sometimes cause signs of colic. The signs of colic can vary from mild to severe. Mild, early signs of colic can include a poor appetite, decreased manure production, lip curling, depression, or laying down more than normal. The most common signs associated with colic include pawing, stretching out, flank watching, teeth grinding, bloated abdomen, kicking at the abdomen, rolling, and getting up and down. Owners and care takers should know what is normal for their horses, so that abnormal behaviors can be recognized as soon as possible.

Normal behaviors, appetite, and physical exam parameters can vary a little bit from horse to horse. In general, adult horses should have a normal rectal temperature of 99-101°F, a heart rate of 24-48 beats per minute, and a respiratory rate of 10-24 breaths per minute. The gums should be pink and moist with a capillary refill time of less than 2 seconds. Most horses will pass 6-10 piles of well formed manure in 24 hours. Horse owners and managers should routinely use thermometers and stethoscopes to evaluate the normal physical exam parameters for their horses.

Causes of Colic

Many different problems with the intestinal tract or other organs can cause colic. The focus of this guide will be on intestinal causes of colic. The average horse has over 100 feet of intestine from their mouth to their rectum, which certainly leaves a large

1. This document is VM177, one of a series of the Veterinary Medicine-Large Animal Clinical Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date July 2009. Visit the EDIS Web Site at http://edis.ifas.ufl.edu.
2. Amanda M. House, assistant professor; College of Veterinary Medicine, Large Animal Clinical Sciences, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611.

area for problems to occur. It is important to remember that a definitive cause of colic is not determined for all cases. Causes of colic can be divided into three general areas: intestinal dysfunction, intestinal accidents, and inflammation or ulceration of the intestine. The most common types of colic are intestinal dysfunctions; which include gas colic, spasmodic colic, and impaction colic. Gas colic typically occurs due to gas build up in the large colon or cecum. Gas stretches the intestine and causes pain. Spasmodic colic results from increased contractions, or spasms, in the wall of the intestine. Fortunately, both gas and spasmodic colic can typically be treated medically and usually respond to treatment on the farm. Impaction colic is caused by a firm mass of feed material which causes a blockage in the intestine. Horses that don't drink enough water and get dehydrated, eat poor quality hay, ingest excessive sand, or have problems with their teeth and can't chew properly are at a higher risk for impaction colic.

Intestinal "accidents" refer to large colon displacements, torsions (twisted intestine), and strangulations that occur in the abdomen. These causes of colic are referred to as intestinal accidents because they are considered just that – accidents. There is no specific way to prevent intestinal accidents from occurring. For example, colon displacements occur when a portion of the intestine, usually the large colon, moves to an abnormal position in the abdomen. Although sometimes intravenous fluids, strict fasting, and/or other medical treatments can help resolve displacements, many require surgical correction. A twist in the intestine or a strangulation of any portion of the intestine will also require surgery for resolution of the problem. Since surgical causes of colic can begin with signs similar to milder cases, it is critical to involve your veterinarian as soon as your horse exhibits any signs of colic.

The last broad category of diseases that cause colic are the inflammatory or ulcerative diseases. This category includes problems like enteritis (inflammation of the small intestine), colitis (inflammation of the colon, and usually diarrhea), and gastric ulcers. Inflammation of the intestine can be very painful for the horse, and cause serious systemic side effects like dehydration and endotoxemia (a systemic inflammatory response to a portion of gram negative bacteria). The inflammatory diseases (enteritis and colitis) can sometimes be difficult to differentiate from surgical problems, although they typically do not require surgery. Rectal temperatures, mucous membrane color, and white blood cell counts can often help veterinarians determine if an inflammatory condition is present. Gastric ulcers are often grouped with the inflammatory causes of colic but typically result in milder signs.

Gastric Ulcers

The prevalence of gastric ulceration in Thoroughbreds in race training varies from 70 to 94%, and most sport horses are similarly affected. The horse's stomach contains two different types of lining – the squamous mucosa on the top half and the glandular mucosa on the bottom. Ulcers can happen in either location, but are much more common in the squamous portion. The squamous mucosa of the stomach is essentially similar to the lining of the esophagus, and the glandular mucosa contains the acid-producing cells. Most equine gastric ulcers affect the squamous mucosa. However, because ulcers can affect various portions of the stomach, causing a variety of clinical signs, the umbrella term Equine Gastric Ulcer Syndrome (EGUS) has been proposed to describe the syndrome. Excess acid exposure is the predominant mechanism responsible for squamous mucosal ulceration, although many details remain unclear.

Clinical signs caused by gastric ulcers in older horses are variable and classically include anorexia (not eating), weight loss, changes in attitude, and chronic or intermittent colic of varying severity. Many horses with endoscopic evidence of disease may appear to be clinically normal or have vague signs that include decreased consumption of concentrates, episodes of colic after eating, poor performance or failure to train up to expectations, poor quality haircoat, and decreased condition or failure to thrive. Diarrhea is not typically associated with gastric ulceration.

Although a diagnosis of ulcers can be suspected based upon clinical signs and response to treatment, the only current method of confirmation is via gastroscopy. This procedure looks into the stomach with a small camera and can easily be performed on a standing horse with mild sedation after a 12-18 hour fast. The principal therapeutic options for ulcer treatment include histamine antagonists (cimetidine, ranitidine, famotidine), proton pump inhibitors--or PPIs (omeprazole, pantoprazole, rabeprazole, esomeprazole), and the mucosal adherent sucralfate. Omeprazole is the only agent approved by the FDA for the treatment of equine gastric ulcer syndrome (GastroGard®, Merial, Ltd.). The other listed PPIs are marketed for human patients. After initial treatment (28 days), a lower daily dose has been shown to decrease or prevent the recurrence of disease in animals maintained in training, and is the basis for UlcerGard® (Merial, Ltd.). It is very important to note that the powder form of omeprazole rapidly degrades in an acidic environment, thus the efficacy of compounded omeprazole is highly variable and these formulations will very often not improve ulcer healing. Omeprazole has been shown to be superior to ranitidine for healing of squamous mucosal ulceration in horses in active race training.

Treatment of Colic

Your veterinarian should be informed as soon as your horse begins exhibiting signs of colic. Treatment with pain relieving drugs such as Banamine® (flunixin meglumine) or bute should only be done under your veterinarian's direction. Obtaining a temperature, heart rate, respiratory rate, and looking at the gums can provide valuable information to your veterinarian about your horse's systemic status.

Veterinary evaluation typically involves taking a complete history of the episode and previous health of the horse, performing a physical examination, rectal examination, and passing a nasogastric tube. Your veterinarian may want to perform other tests, but typically more advanced diagnostics are done at a referral center. Most referral centers will repeat much of the original exam done by your veterinarian to determine if there are any important changes, and can also do blood work, radiographs, ultrasound, and endoscopic examination as deemed appropriate.

Treatment for colic depends on the suspected cause. Pain medication such as Banamine® is typically indicated for initial management. Banamine® usually takes about 30 minutes to take effect, so sedatives such as xylazine and detomidine can help relieve pain while the Banamine® begins working. Buscopan™ is another drug that may be administered by your veterinarian and may help treat spasmodic colic by stopping intestinal spasms. Fluid therapy is typically also administered by an oral or intravenous route, depending on the severity and suspected cause of the colic. Laxatives like mineral oil and Epsom salts are often utilized for impactions. Horses that are exhibiting signs of colic should generally be kept off feed until the suspected cause has resolved. It is important to remember that mild intestinal upsets and colic that require surgery may start out with very similar signs. Persistent pain remains the #1 indicator for exploratory surgery in cases of colic. Fortunately, the prognosis for horses that undergo surgery is better now than it has been in the last 50 years. Most horses will return to their previous level of competition after about a 3 month post-surgical rest.

What You Can Do

Remember to stay calm if you notice that your horse is showing signs of colic. Remove the feed, but not the water, from the stall. Walking can help prevent injury if your horse is trying to go down and roll, but remember to first consider your safety as well as that of the horse. If the horse is too painful and cannot be safely walked, leave them in the stall until your veterinarian arrives. Call your veterinarian as soon as you notice a problem. Take the horse's heart rate, respiratory rate, and temperature before the vet arrives. Evaluate your horse's gum color and moisture. It is important to have the horse's previous medical and diet histories available. Have there been any changes in the horse's routine? This information will be helpful for the veterinarian evaluating the horse.

Do not give more than one dose of pain medication without consulting your veterinarian. Do not walk the horse or yourself to exhaustion. Absolutely do not try to pass a tube or force feed mineral oil. Mineral oil in the lungs can result in a

fatal pneumonitis. It is also not advisable to insert a hose or anything rectally into a horse to give an enema. Remember that chronic mild signs of colic over several days or longer may also indicate a serious problem and require veterinary evaluation.

Prevention of Colic

Unfortunately, there are not many absolutes when it comes to the complete prevention of colic. However, good management and routine health care can certainly help reduce the incidence of colic in any horse or herd. Establishment of a set routine, regular exercise and/or turnout, and a high quality forage diet are all important management steps. Any concentrate feed should ideally be divided into two or three feedings, and grain based feeds should be limited when possible. Horses should have annual dental care, and older horses may need dental evaluations every 6 months. Routine fecal examination and deworming for tapeworms are also critical for good herd health.

How to prevent ulcers is one of the questions veterinarians are most commonly asked. Unfortunately, short of leaving horses in a field and out of work, there is not a great answer to this question. Recently, feeding an alfalfa hay/concentrate diet has been shown to reduce the severity of gastric ulceration in young horses kept in work, relative to a grass hay/concentrate diet. Other factors associated with a decreased risk of gastric ulceration in Thoroughbreds in race training include turnout with other horses and training on the property where horses are normally housed.

References and Further Reading:

AAEP and Bayer Animal Health Brochure. Colic: Minimizing its incidence and impact in your horse. http://www.aaep.org/health_articles_view.php?id=25

AAEP Horse Owner's Information Home Page: http://www.aaep.org/index/php

Bell RJ, Mogg TD, Kingston JK. Equine gastric ulcer syndrome in adult horses: a review. *NZ Vet Journal* 2007 Feb; 55(1):p 1-12.

McClure SR, Carither DS, Gross SJ, and Murray MJ. Gastric ulcer development in horses in a simulated show or training environment. *JAVMA* 2005 Sep 1; 227(5): 775-777.

Merritt AM, Sanchez LC, Burrow JA, Church M, and Ludzia S. Effect of Gastrogard and three compounded oral omeprazole preparations on 24 h intragastric pH in gastrically cannulated mature horses. *Equine Vet J* 2003 Nov; 35(7): p 691-695.

USDA APHIS. Incidence of Colic in U.S. Horses. October 2001; http://nahms.aphis.usda.gov/equine/equine98/colic.PDF