



Equine Colic:

Causes & Symptoms, Treatment and the Importance of Dietary Management

WHITE PAPER



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Anatomy of the Equine Gastrointestinal (GI) Tract

The anatomy of the equine digestive tract makes the horse more susceptible to colic than most other species. The equine stomach is relatively small compared to the size of the animal. Additionally, the horse has a one-way valve at the junction of the esophagus and stomach, allowing movement of feed, water and gas into the stomach but not out. The only movement of ingesta is one-way to the lower GI tract. If there is a blockage further along in the small or large intestine, the one-way movement of ingesta is blocked causing gastrointestinal upset and colic.

The horse also has a large cecum, which is a blind sac, and a right ventral and left dorsal colon. These anatomic features aid in normal digestion but also serve as potential problem areas for development of colic. For example, the right ventral colon narrows and folds back upon itself in an area known as the pelvic flexure. The pelvic flexure is often the site of impactions that can cause a blockage of normal movement of the ingesta through the intestine, resulting in a bout of colic.

The blood supply to the digestive system of the horse also has some unique features. The celiac and cranial

mesenteric arteries branch from the abdominal aorta and supply blood to the GI tract. Impaction, volvulus (twisting, flipping or rotating) of any portion of the intestines may interrupt blood supply to a section of the intestines causing insufficient blood supply to the area and possible (ischemia) tissue death. In some instances, parasites can damage the vasculature of the digestive system and create conditions that may lead to colic. An example of this would be when the cranial mesenteric artery is damaged by the migration of the equine intestinal worm *Strongylus vulgaris*.

Other unique anatomical features can also cause colic on some occasions. These include hernias, such as umbilical or scrotal, where the intestines may become entrapped in the hernia, with obstruction or ischemia occurring secondarily to the entrapment. There is also a natural anatomic space above the spleen and left kidney, defined by the nephrosplenic ligament. The nephrosplenic ligament is a strong band of tissue connecting the spleen and kidney. This ligament creates a shelf over which the colon can sometimes become displaced, creating a blockage of normal movement of ingesta or interruption of normal circulation.

Definition of Colic:

Colic is defined as acute abdominal pain. The term colic is commonly used to refer to gastrointestinal upset in the horse that may stem from any one of a number of causes.

Causes of Colic

In most cases colic is due to one of the following reasons:

1. The intestinal wall is stretched excessively by gas, fluid or ingesta, and this stretching causes pain due to stimulation of nerves in the intestinal wall.
2. Blockages may cause increased tension on the mesentery, which is the tissue that supports the intestinal tract within the abdomen.
3. Circulatory interruption (ischemia) caused by parasite migration, or entrapment or twisting of the intestines.

4. Inflammation of the intestinal lining or mesentery due to infection, bacterial or viral toxins or damage, such as in peritonitis.

Excessive stretching and blockage can be caused by changes in diet, new sources of roughage (forage such as hay or grass), not enough roughage, too much grain, an abrupt change in diet including increases in grain or change in quality or amount of roughage.

Other causes of colic include foreign bodies such as intestinal concretions, sand consumption, accidental grain overload/engorgement, ulcers, over or misuse of drugs and medication leading to upset of the normal bacterial flora of the lower GI tract, or intussusceptions (telescoping of intestine upon itself).

Symptoms of Colic

There are numerous clinical signs of colic, not all of which are consistently exhibited by a horse in colic, but the most common include:

- Pawing repeatedly with the front feet
- Looking back at the flank area
- Arching the neck and curling of the upper lip indicating pain
- Generalized signs of discomfort such as lying down, rolling from side to side, kicking at the abdomen, sweating, and stretching out in a wide legged stance
- Straining to defecate and decreased number of bowel movements
- Loss of appetite
- Nervousness
- Distention of the abdomen

Treatment of Colic

Some cases of colic are mild and the horse recovers without requiring medical or surgical intervention, but the majority of colic cases are considered a medical emergency and require some form of medical or surgical treatment. If you suspect that your horse is suffering from colic, it is most important to contact your veterinarian immediately for professional advice, definitive diagnosis and appropriate treatment.

Some of the medical treatments your veterinarian may utilize, depending on the seriousness of the situation, include:

- Pain relief via analgesics and antispasmodics – for example, nonsteroidal anti-inflammatories
- Sedatives to calm the horse and relieve anxiety – e.g. xylazine
- Passing of a nasogastric tube to relieve gas and fluid that may have accumulated in the stomach due to blockage further down in the digestive tract
- Laxatives to clear blockages – e.g. mineral oil
- Intravenous fluid therapy to prevent dehydration and support normal organ function
- Treatment to prevent toxemia from bacterial endotoxins such as antiprostaglandins like flunixin
- Dewormers – i.e. larvacides to remove migrating forms of *Strongylus vulgaris*

Surgery may be necessary if there is a mechanical obstruction (anatomical displacement or impaction) that cannot be corrected medically, or if the obstruction has interfered with normal circulation and caused ischemia.

Importance of Dietary Management

While parasites, infectious diseases and mechanical entrapments are causes of colic that may or may not be due to dietary changes, dietary management plays a major role in preventing many cases of colic. The following are a few dietary management principles and practices to follow:

- Provide an adequate and consistent source of clean water
- Feed high quality hay and grain from known reputable sources
- Feed on a regular schedule
- Provide exercise on a regular basis and when increasing exercise, do so on slow and deliberate rate of increase over a period of several days or weeks

- Make gradual changes to diet, including change of both grain concentrate and hay types, qualities and quantities
- Roughage (hay and forage) should comprise the majority of the diet
- Feed hay, or at least a portion of hay, before grain
- Grain portion of the diet should be only what is necessary for the horse based on conditioning, exercise program, reproductive state, and need for additional energy from grain
- When traveling or transporting, make sure to bring along enough of the horse's usual normal diet (both grain and hay) to avoid abrupt changes to new feed sources
- Consider feeding multiple small meals, if it is necessary to feed larger quantities of grain or hay (i.e. due to need for added nutrients and energy because of heavy exercise or training)
- Prevent intestinal parasites (worms) by following sound prevention programs
- Maintain good dental condition to provide for adequate chewing of feed and prevent interruption in feed consumption due to dental problems
- Consider feeding probiotic and prebiotic products to support a strong microflora population in the lower GI. Healthy gastrointestinal microflora may aid in prevention of gastrointestinal upsets that may lead to colic

About the Author

Ross W. Miller, MS, DVM, MBA, is Senior Product Development Manager for Alpharma Inc.'s Animal Health Division. Dr. Miller has over 20 years experience in animal health and veterinary medicine, and has been actively involved in development of numerous nutritional and pharmaceutical products for horses.

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Alpharma Animal Health Division

440 Route 22 East
Bridgewater, NJ 08807
Ph: 1-800-834-6470