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[Impact of Management Factors on Development of Colic in Horses](#)

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Merial Veterinary Bulletin
TSB-0-00012-FTB

[Risk Factors Associated With Recurrent Colic and Chronic, Intermittent Colic in Horses](#)

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Merial Veterinary Bulletin
TSB-0-00018-FTB

Related References:

Cohen ND. Texas Colic Study. *The Horse*. May 1995:22.

Uhlinger CA. Decreasing colic. *Large Animal*

Equine colic

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A Scientific Review

For animals of great size and power, horses are fragile when faced with gastrointestinal problems. The word "colic" is nonspecific, and simply refers to the manifestation of visceral abdominal pain. It may be acute, chronic, or recurrent. There are three primary causes of colic in horses:

1. Distention and/or obstruction of the gut with fluid, gas, ingesta or foreign bodies.
2. Tension on the mesenteric root such as that caused by twisting of the intestine.
3. Ischemia or infarction as may be caused by parasite damage, or intestinal torsion/volvulus.

The gastrointestinal tract of the average 1000 pound horse has a capacity of 120-200 liters. The transit time of ingesta through the system is rapid, with liquid leaving the stomach in about 30 minutes and entering the cecum in 2 hours. Liquid may then be retained in the cecum and large colon for a few days. Particulate matter passes at a slower rate than liquid. The equine stomach is small in relation to the animals' body size, and horses eat small frequent meals. The small intestine is about 70 feet in length, and is involved in most of the digestion and absorption of proteins and soluble carbohydrates. Some digestion of carbohydrates and protein also occurs in the large intestine, which totals about 25 feet in length. Fiber digestion by bacteria and protozoa, and water storage and reabsorption are the other main functions of the large intestine.

Clinical Signs

Signs of colic include restlessness, inappetence, rolling, sweating, groaning, kicking at the abdomen, and/or recumbency. Depending on the severity of the condition, affected horses may also have elevated heart and respiratory

*Large Animal
Veterinarian.*
April/May 1995:24-
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rates, prolonged capillary refill time, cold extremities, and injected mucous membranes. Evidence of shock is present if the disease condition affects cardiovascular integrity, such as with infarction (volvulus, thromboembolism, torsion) or extreme visceral distention (impaction, dilation, obstruction).

**TSB-9-99017-
FTB**
(formerly TSB-5-
95036-FTB)

Disorders of the gastrointestinal tract, which lead to colic, are categorized by site and nature of the lesion. Major conditions affecting the stomach are gastric ulceration, impaction, dilation, parasitism, abscesses, and neoplasia. A common gastric condition is ulceration, which occurs most often in young foals and athletic horses under such stresses as racing.

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Small Intestine

The majority of disorders that affect the small intestine of horses result in signs of abdominal discomfort. Conditions of the small intestine that cause acute colic may be classified as simple non-strangulating obstructions, strangulating obstructions, and non-strangulating infarctions.

Simple obstructions occur when the lumen of the small intestine is blocked, without concurrent vascular compromise. During such obstruction, there is an accumulation of intestinal secretions, stomach and pancreatic fluids, and ingesta. Intestinal distention occurs as this material is unable to move distally due to the obstruction. A simple small intestinal obstruction results in minimal tissue damage, unless there is continued or increased pressure at the site, or a strangulating obstruction develops. Examples of a simple obstruction include impaction of the small intestine with ascarids, feed, or foreign bodies; and obstruction by intra-abdominal abscesses, adhesions, neoplasia, or a predunculated lipoma. Strangulating obstructions result when there is an interruption in the intestinal arterial supply and/or venous drainage, with concurrent obstruction of the intestinal lumen. After complete vascular obstruction to the intestine of the horse, severe tissue damage occurs due to ischemia with lack of oxygen delivery to the tissue. Such damage results in loss of the protective mucosal barrier of the intestine, with resultant systemic and/or peritoneal absorption of bacteria and endotoxin. Due to the nature of strangulating obstructions, immediate surgical intervention is required to correct the problem. Volvulus of the small intestine is one of the most common causes of strangulating obstruction. This occurs when the small intestine is twisted on the long axis of the mesentery by at least 180 degrees. The volvulus may be primary or associated with another condition which provides the impetus for such a twist to occur.

Other conditions that may contribute to a volvulus include epiploic foramen entrapments, hernias, adhesions, and incarcerations of the bowel in other abdominal structures. In addition to volvulus, other strangulating obstructions of the small intestine may be due to lipomas, intussusceptions, and hernias. Non-strangulating small intestinal infarctions may be caused by either *Strongylus vulgaris* migration or a decrease in blood flow secondary to shock. Intestinal dysfunction and/or infarction may result

during the three larval migration stages of *S. vulgaris*. The initial migration is from the lumen through the intestinal mucosa. The fourth-stage larvae then migrate through the vascular system up to the cranial mesenteric artery, where they can cause thrombus formation in this artery and its branches. Finally, the fifth-stage larvae migrate back through the mucosa to the intestine. Thromboembolic colic occurs when emboli break off the thrombus in the cranial mesenteric and/or ileoceocolic arteries and shower the intestinal tissue's vascular supply. This leads to obstruction of blood flow to the tissue and intestinal ischemia.

Large intestine

Disorders of the large intestine are a frequent cause of equine colic. About 50% of deaths in horses are caused by or related to conditions in the large intestine. The cecum may be involved in several pathogenic events, including impaction with feed material, intussusception, rupture secondary to parturition, gas distention, and volvulus. The dorsal and ventral colon segments, or large colon as they are referred to collectively, are commonly involved in pathologic processes leading to colic. Impaction of this area with ingesta or sand is one of the most common intestinal disorders in the horse. The large colon is freely movable within the abdomen because it has only a single mesenteric attachment to the body wall. Normally, the anatomic arrangement of the large intestine remains constant. However, if motility is altered or other abnormal events occur, this may lead to various types of colonic displacements. These include right and left dorsal displacements, non-strangulating volvulus (less than 270 degrees), strangulating volvulus (at least 270 degrees), or cranial displacement of the pelvic flexure. Intussusception of the large colon is rare.

Enteroliths, or intestinal calculi, have been widely reported to cause colonic obstructions, especially in horses of the Arabian breed. The composition of these "stones" is struvite, or magnesium ammonium phosphate. Concretions form around a dense central nidus, which may be composed of foreign objects, metal, hair, or stone. Other foreign bodies such as rope, fence materials, rubber, tarps, plastic, etc., may impact in the transverse or small colon segments.

The most common abnormality involving the small colon is intraluminal obstruction, although both strangulating and non-strangulating obstructions may also occur. Impaction of the small colon with fecal material is the most common cause of obstruction, which may also result from the lodging of foreign bodies and enteroliths. Surgery may be necessary for removal of obstructions from the small colon, if the horse is unable to pass the material after routine medical intervention. Intramural hematomas of the small colon are uncommon, but may be found in older horses. Surgical resection of the affected colon is necessary in these cases. Strangulating obstructions, or those that lead to vascular compromise, occur uncommonly in the small colon.

Causes

There are many factors involved in gastrointestinal disorders, and parasitism is considered to be a major one. Dr. Christine Uhlinger of the College of Veterinary Medicine at North Carolina State University has been studying the effects of anthelmintic schedules on the incidence of colic for many years. Dr. Uhlinger's studies select colic as one marker of parasitic disease in the horse. The goal of the major study she undertook was to measure the incidence of colic in horses on the typical bi-monthly deworming treatment schedule, comparing this to the incidence of colic in horses treated with two other protocols designed to minimize fecal egg counts. One group of horses was dewormed every two months with a non-ivermectin product, given in alternation so that no product was given twice in a row. Another group was administered a non-ivermectin agent monthly, and a third group was given EQVALAN® (ivermectin) Paste every two months. It was found that adopting one of the two so-called "optimal" deworming programs decreased incidence of colic episodes substantially. These optimal treatment regimes were either monthly administration of a non-ivermectin anthelmintic, or giving EQVALAN every two months. Based on the results of this five-year study, Dr. Uhlinger showed that these optimal anthelmintic treatments designed to minimize fecal egg counts resulted in statistically and clinically significant decreases in the incidence of colic.

Often, it is difficult to be definitive about the etiology of colic cases in the equine. Feed quality and availability, exercise, stress, and parasitism are only a few of the factors that may play a part in causing colic episodes. Although a substantial proportion of field colics are associated with parasitic infection, colic may occur even in horses under good management practices and deworming regimens.

Optimal anthelmintic schedules may not eliminate colic episodes, but these practices have been shown to significantly reduce the number of cases of colic in horses. Equine colic is a widely-researched area of horse health, as it is a commonly encountered problem and may result in tragic losses. The cost of surgical intervention in severe cases may be prohibitive, and these surgeries are often hard on the horse. Therefore, any preventive measures that can be taken by the horse owner may help reduce the possibility that the horse will be lost to, or severely compromised by, about with colic.

References

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