

COLIC : EQUINE PUBLIC ENEMY #1

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Often unpredictable and frequently not preventable, colic is a continual concern for all horse owners and is a frightening concept when it is your horse that is colicking. In the horse, "colic" officially refers to any type of abdominal pain. Luckily, most types of colic (over 80%) respond well to medical therapy on the farm. This article will cover some of the basic types of colic, what your veterinarian is doing when dealing with a colic episode, standard treatments for colic, and some of the potential complications. Additionally, we have now identified a few risk factors that increase the likelihood of colic. Being able to avoid these factors may help you decrease the risk of colic in your horse.

Gastrointestinal Anatomy

Horses have an intestinal tract that is adapted to digest hays and grasses. The first part of the gut is similar to that in people: food travels down the esophagus, is exposed to acid in the stomach, then digestion and absorption begin in the small intestine. The remainder of the gut is greatly elongated and specialized to process the cellulose in hays. The cecum (resembles the appendix in people) and colon (large intestine) are very large and take up most of the space in the abdomen. Because of its length, the colon is folded on itself and loops around, somewhat like a folded extension cord or ribbon. The extra length gives the horse more time to remove nutrients from the hay. These portions of the gut also contain microorganisms that help digest the hays.

Types of colic

The majority of colics will be impactions or gas colics. Impactions occur when feed material builds up in a part of the gut (usually the colon) and cannot be readily dislodged. The horse becomes painful when the gut wall stretches and when the gut contracts strongly in an effort to push the feed through the colon. Impactions may occur because of coarse feed (not properly chewed), dry feed (lack of water intake or dehydration), poor motility, or because of something else obstructing the path. Because of the folds and turns of the colon, there are several sites that are narrowed and prone to impactions. Horses with impactions are often mildly painful and off feed but may not get much worse for several days.

Gas colics are believed to occur when the microbes in the colon produce excessive gas, perhaps due to dietary changes or highly fermentable feeds. The gas stretches the gut wall, causing mild to moderate pain. Most gas colics will resolve with minimal treatment. However, gas colics have been theorized to lead to colon displacements.

The elongated colon is not well attached within the abdomen and occasionally moves out of position. It may flip forward, hook over the kidney, or even twist (imagine a phone cord). When this

happens, it often leads to impactions and gas buildup, causing more severe or prolonged pain. If it twists tightly, it can prevent blood flow to parts of the colon, causing it to become damaged or to die from lack of oxygen. Horses with a large colon torsion are usually in severe pain and are very sick because of leakage of toxins through the damaged gut wall. This type of colic requires emergency surgery.

Similarly, other problems that interrupt the blood supply to the gut cause major damage. Older horses may get fatty tumors that can wrap around the small intestine and strangulate it, or parasites may migrate through the blood vessels, causing direct damage to the vessels and indirect damage to the gut.

Finally, colic may occur secondary to motility dysfunction. If the regulatory mechanisms responsible for moving feed down the gut become disrupted, food may stop moving even if the pathway is clear. In the small intestine, the gut adds fluid to try to move the food along, but this fluid cannot move, either. So much fluid can be added to the gut that the horse becomes dehydrated and shocky. The fluid eventually backs up into the stomach. Because horses cannot vomit, the stomach is stretched, causing pain. If the fluid is not removed, the stomach can actually rupture. If the motility problem is in the colon, gas buildup also occurs, leading to gas colic and potentially displacements. In most cases, we do not know what causes the motility dysfunction but it may often be related to infections in the gut or in the abdominal cavity. These horses often become sick due to toxins coming from the affected gut.

These are just a few of the multiple causes of colic; however, most types of colic will resemble one of these. Additionally, other problems such as bladder stones and tying up may occasionally mimic gut pain and look like colic.

When to call the veterinarian

When a horse is painful from colic, he will often look at his side and bite or kick at his flank or belly. More severe cases will lie down and/or roll. In some cases, manure production will be decreased or absent, or the manure will be dry or covered with mucus. Frequently horses will be off feed (eg may not eat all their grain or hay). Often they will improve when walked. If you know the colic is of recent onset and appears mild, you can try walking the horse and seeing if he improves without veterinary assistance. If it has been several hours since the horse was last observed (duration of colic signs unknown) or if the colic is more severe and unresponsive to walking, a veterinarian should examine the horse as soon as possible. Owners can learn to take pulses and to check the horse's gums for signs of dehydration or toxicity. If the horse's heart rate is over 45-50 beats per minute or if the gums are tacky, have a prolonged refill time or are off color, the horse may be dehydrated or toxic and needs immediate attention.

When the veterinarian arrives...

When your veterinarian arrives to examine a colic, she/he will try to determine the severity and

the general type of colic. It is very unusual to be able to diagnose the exact cause of colic, but she may be able to determine if it is more likely to be an impaction or gas colic or if it may involve damaged bowel or toxemia. A routine physical examination (usually done by car headlights or in the barn because it is invariably at night) will help determine the horse's cardiovascular status and identify signs shock or toxemia. If the horse is very uncomfortable, the veterinarian may give a short acting analgesic/tranquilizer to aid in performing the examination. Depending upon the situation, the veterinarian may then pass a nasogastric tube (from the nostril to the stomach), perform a rectal examination and/or evaluate the abdominal fluid by doing a "belly tap". The nasogastric tube is passed to make sure there is no fluid build-up in the stomach. If there is fluid, this can be a life-saving measure (to prevent rupture of the stomach). If there is minimal fluid, the tube can be used to give mineral oil to the horse to lubricate any impaction. It may also be used to give water to the horse if it seems to be dehydrated. This has the added benefit of stimulating gut motility. (Think about house training puppies : better watch them closely following feeding and exercise.) The rectal examination allows the veterinarian to palpate structures in the caudal half of the abdomen. Sometimes an impaction can actually be felt. Other times distended intestine is palpable. These findings can help determine the type of colic and type of treatment necessary. A rectal examination is always somewhat risky, because of the potential for tearing the rectum. If the rectum is torn, feces can enter the abdominal cavity, causing severe problems. Most horses should be sedated and/or twitched for this examination and it may not need to be performed for every colic. Finally, if your veterinarian is concerned about infection in the abdominal cavity or about damage to the intestines, she may stick a needle in the abdomen and try to collect fluid for analysis. Dead or dying intestines leak cells that can be seen microscopically and appear as a red or cloudy tinge to the fluid in the vial. This test is most useful for determining if the horse needs surgery and is often not performed unless there is a problem getting the horse to a referral institution or if the colic persists. If you have taken your horse to an equine hospital, other bloodwork and tests (such as ultrasound and radiographs) may also be performed.

Treatment for colic

In most instances, your veterinarian will diagnose a probable impaction or gas colic. Treatment usually involves controlling the horse's pain with analgesics, softening the impaction with mineral oil or other laxatives, and encouraging motility by having you walk the horse. She will likely recommend that you not feed the horse hay or grain until he passes manure and the colic resolves. If an impaction is present, more food would just add to the problem. (However, grass does not contain much fiber and the act of grazing may also help stimulate bowel motility.) Most cases will respond to this type of treatment within a few hours. A few horses will need additional fluids for rehydration (oral or intravenously) or may need to be reexamined. If the colic is more severe,

requires intensive treatment, or does not resolve with on-farm treatment, the veterinarian may recommend you take the horse to an equine hospital equipped for abdominal surgery and intensive care. At the hospital, many of the tests will be repeated to assess how the horse is responding to your veterinarian's treatment and a decision made to either go to surgery or to continue medical treatment with close monitoring. Much to everyone's regret, at times the colic is so severe or the prognosis so guarded that a decision is made to euthanize the horse. While it is not required, it is usually helpful to have a postmortem examination performed to determine the cause of colic in the event that management changes can prevent similar episodes in other horses.

Complications following colic

Most colic episodes will fully resolve with no long lasting consequences. However, if toxins are released into the abdominal cavity or bloodstream, or if colic surgery is required, the horse will be at risk for other problems.

Certain bacteria carry toxins. Many of these are found in the gut normally. If the toxin load overwhelms the usual defense mechanisms or if the gut is damaged and lets the toxins leak out, the horse can become ill. These horses may become shocky (poor blood flow causing an elevated heart rate and cool limbs), have reddened or purplish gums or red lines around the teeth, and may seem very depressed. The toxins can cause laminitis, clotting problems, and damage to other organs (ie kidneys).

When horses are stressed (eg colic surgery), their immune system can be weakened. Many horses carry organisms that can cause diarrhea, in particular *Salmonella*, but are usually unaffected. When stressed, the immune system can no longer keep these organisms under control and the horse develops diarrhea. This can be a severe complication of colic and can be difficult (and expensive) to treat. Many horses will have diarrhea following intestinal disturbances, so they will be closely monitored for salmonellosis.

If a horse has colic surgery, he will also be watched for incisional infections, infections within the abdominal cavity, and motility disturbances. Some horses will get motility problems following small intestinal surgery that can significantly prolong nursing care and hospital stays. Performing surgery also places a horse at risk for developing intestinal adhesions. Adhesions may make the intestines stick to each other or the body wall in abnormal positions. Some adhesions can cause repeated bouts of colic. In general, surgery for large colon problems has a greater success rate than surgery for small intestinal problems. Luckily the odds for both are improving all the time.

Prevention of colic

Horses are prone to colic and many types of colic cannot be prevented. However, there are some relatively simple steps that can be taken to ensure that your horse is at the lowest possible risk for colic.

These factors have been found to alter the risk of colic in epidemiological studies.

- * **Always have fresh, clean water available** - horses on pasture without a water trough available are at increased risk of colic even if without water for only 1-2 hours (the risk is increased 10x if they are over 6 years of age). If the water is not fresh they may not drink enough. Closely monitor automatic waterers and water sources in winter. Stop to let trailered horses drink and/or pretreat them with mineral oil before starting a long trip.

- * **Allow pasture turnout** - horses that had access to 2-3 different pastures during the previous month had lower colic risk than those without pasture access.

- * **Avoid feeding on the ground** in sandy areas - horses may ingest enough sand to cause motility problems and gut irritation; feed them off the ground to decrease sand ingestion.

- * **Feed grain and pelleted feeds only as required** - colic risk is increased 70% for each pound increase in whole grain corn. Pelleted feeds led to a 6-9.5x increase risk and sweetfeed led to a 4-7.5x increase risk in colic.

- * **Watch horses carefully following changes in exercise, stabling, or diet and avoid changes** whenever possible - horses with a change within the last 2 weeks were significantly more likely to colic; farms with more than 4 changes in feed in the year had three times the incidence of colic than farms with less than 4 changes.

- * **Watch broodmares** closely in the two months following foaling and watch **any animals that have been ill or have colicked before** - all are at increased risk of colic

- * **Have your horse's teeth floated** every 6 months - this ensures good mastication of hay and may help prevent impactions of coarse feed stuff

- * **Control parasites**- horses on a daily wormer or regularly dewormed with ivermectin or a similar product have been found less likely to colic. Be careful when deworming foals : the dead parasites may actually block the intestine. Work with your veterinarian to customize a deworming program for your horses. Deworm all horses at a barn simultaneously and control manure levels on pastures.

- * **Closely monitor your horse** and care for it as much as possible yourself - horses that receive care on a day-to-day basis from their owners are 2-3x less likely to colic than those receiving care from a stable manager or trainer.

Above all, be a proactive owner. If your horse is being placed at unnecessary risk for colic, try to adjust the situation. If your horse does colic, appropriate and timely care may make a great deal of difference in the outcome. Do not hesitate to call your veterinarian if you are concerned about your horse and if you are unsure about the examination or treatment, ask questions.