

## **ILPH Project Romania- Medical treatment of colic**

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## **Investigation and Management of Medical Colic in the Horse**

The term “colic” refers to abdominal pain, which may occur as a result of a number of different causes. Some conditions, such as small or large intestinal volvulus, strangulating lesions, intussusceptions and some displacements or non-strangulating obstructions require surgical treatment if the horse is to survive. The aim of this article is to describe the more common medical causes of colic, their diagnosis and management and to discuss methods of prevention.

### **Medical causes of colic:**

Spasmodic colic  
Tympanitic colic  
Sand colic  
Cyathostomiasis  
Pelvic flexure impaction  
Small colon impaction\*  
Caecal impaction\*  
Left dorsal displacement (nephrosplenic entrapment)\*  
Gastric ulceration  
Colitis  
Right dorsal colitis  
Equine grass sickness (dysautonomia)  
Anterior enteritis#  
Peritonitis#  
Abdominal abscess#  
Abdominal neoplasia#  
Haemoperitoneum  
Foals- meconium impaction  
Enterocolitis

\* Indicates may require surgical treatment if fails to respond to medical management.

# Indicates may require surgery (exploratory laparotomy) for diagnosis and management.

### **Approach to the colic case**

Signalment-

Age- meconium impaction, enterocolitis and intussusceptions in neonatal foals

-younger horses are more prone to parasitism and gastroduodenal ulceration.

- strangulating lipomas in older animals
- dental abnormalities in older animals may predispose to faecoliths, enteroliths.

Sex- uterine tears, haemorrhage from uterine artery, colon torsions in post-foaling mares.  
 inguinal herniation in colts

### **History**

Predisposing factors may include recent changes in management, (eg reduced grazing time/reduced exercise which can result in impactions), increased access to rapidly growing pasture or unusual volume of grain intake (tympanitic colic), poor history of anthelmintic treatment ( larval cyathostomiasis, spasmodic colic, ileal impactions and ileocaecal intussusceptions ) recent anthelmintic treatment in horses with a heavy parasite burden (eg parascaris infection in foals and weanlings), treatment with non-steroidal anti-inflammatory drugs (gastric ulceration, right dorsal colitis). Post-prandial colic and /or bruxism may indicate gastric ulceration. Recurrent episodes of colic can be associated with displacements, intestinal abscessation or neoplasia. The severity of the colic signs (eg mild, such as occasional pawing the ground and flank-watching, or more severe, including violent rolling) and duration and progression of signs is important in deciding whether a colic case is medical or surgical. Frequency of defaecation and the nature of the faeces is also useful information. A reduced quantity of dry, mucous-covered faeces may indicate reduced gastrointestinal motility in cases of impaction. Loose faeces could suggest that the abdominal pain is due to colitis.

### **Physical examination**

Examination of the colic case should include assessment of mucous membrane colour and capillary refill time, assessment of pulse quality, measurement of heart rate, respiratory rate, rectal temperature and thorough auscultation of the thorax and abdomen. Hypermotile gut sounds may be associated with spasmodic or tympanitic colic. Decreased gut sounds (borborygmi) may indicate a physical obstruction (impaction or strangulation) or functional obstruction (ileus) which can occur in cases of peritonitis, anterior enteritis of equine grass sickness.( This initial basic examination may indicate whether a surgical lesion, such as a strangulating obstruction is likely. Compromise to the vascular supply to a region of the gastrointestinal tract will result in severe pain, endotoxaemia, elevated heart rates and respiratory rates, and toxic (purple/congested mucous membranes), with a prolonged capillary refill time (>2 seconds).

More detailed examination should include rectal palpation, to identify the presence of small or large intestinal distension, impactions or colonic displacements. A nasogastric tube should be passed to check for gastric reflux which indicates a physical or functional obstruction. Abdominocentesis may also be performed. Serosanguinous fluid is consistent with an ischaemic lesion and intestinal wall compromise. Grossly turbid fluid may be obtained in cases of peritonitis. Accidental splenic puncture results in dark blood with a PCV higher than that of peripheral blood, which clots on standing. In true cases of haemoperitoneum, the sample will not usually clot. Laboratory analysis of peritoneal fluid (in particular the white blood cell count, WBCC and total protein, TP), is helpful if available.

In a hospital situation, transabdominal ultrasonography, which may identify thickened or hypomotile intestine, increased or turbid peritoneal fluid, abdominal masses and other abnormalities and gastroscopy, which will allow the diagnosis of gastric ulceration may provide additional information when investigating the medical colic case; however, this equipment is expensive and often not widely available.

### **Diagnosis and treatment of medical conditions causing colic**

#### **Gastric ulceration**

Predisposing causes for gastric ulceration include starvation (24-48 hours or longer), use of non-steroidal anti-inflammatory drugs (NSAID's), a high concentrate diet, infrequent feeding and stress (particularly in foals).

Clinical signs include mild to moderate colic symptoms after eating, reduced appetite for concentrates and bruxism (teeth grinding).

Medical treatment options include proton pump inhibitors such as omeprazole and histamine type 2 receptor antagonist (ranitidine, cimetidine). Antacids (eg magnesium oxide) can provide symptomatic relief, but require 2-4 hourly administration. Sucralfate is suggested to promote healing of ulcers.

Management strategies to promote healing and prevent recurrence of ulceration include allowing more access to roughage.

### **Equine Grass Sickness (Equine Dysautonomia)**

This disease is reported to occur in the UK, Norway, Sweden, Denmark, Germany, France, Italy, Switzerland, Belgium, Holland, Finland, Ireland, Hungary, Chile, Argentina, Columbia and has been suspected in Romania and Australia.

The disease is divided into three categories, acute, sub-acute and chronic. Clinical signs may include moderate to severe colic (acute and sub-acute cases), a variable degree of dysphagia, muscle fasciculations, ptosis (drooping of the eye-lashes), patchy sweating, a base-narrow stance and development of rhinitis sicca (nasal crusts).

The acute and sub-acute forms of the disease are fatal. Some mild, chronic cases which are able to eat respond to nursing management.

### **Anterior enteritis**

Anterior enteritis causes ileus, with secondary dehydration, electrolyte disturbances and colic. A relationship between anterior enteritis and *Clostridium perfringens* has been suggested. Distinguishing between this condition and surgical lesions causing small intestinal obstruction is difficult clinically. If anterior enteritis is suspected and surgical exploration to confirm the diagnosis and decompress the small intestine is not an available option, treatment may be attempted with metronidazole, flunixin meglumine and supportive fluid therapy and gastric decompression via a nasogastric tube.

### **Ascarid impaction**

Small intestinal impactions due to *Parascaris equorum* nematodes can occur in foals and weanlings. The incidence is increased following the administration of anthelmintics to animals with a heavy parasite burden.

Medical treatment with laxatives (eg liquid paraffin via a nasogastric tube), and analgesics may be successful. Severe impactions require surgical treatment.

### **Caecal tympany**

Tympany can develop due to ingestion of highly fermentable feedstuffs (eg lush pasture, large amounts of grain), reduced caecal motility or a colon impaction.

Clinical signs include colic, right-sided abdominal distension and tympanitic gut sounds (a "pinging" sound) on auscultation of the right flank. Heart rates and respiratory rates may be elevated due to pain. Distension of the caecum is palpable on rectal examination. If the distension

is severe, this can cause gastric outflow obstruction and therefore a nasogastric tube should be passed to check for gastric reflux.

Treatment includes administration of analgesics (eg alpha-2 agonist drugs such as xylazine, detomidine) and butorphanol or other opioid drugs. Caecal trocarization can be performed if medical therapy does not resolve the condition; however, there is a risk of peritonitis, or cellulitis at the site of trocarization and therefore broad-spectrum antibiotics should be administered.

### **Caecal impaction**

Predisposing causes for caecal impactions include ingestion of coarse roughage, poor dentition, sand ingestion, inadequate water intake and anti-inflammatory drugs or general anaesthesia.

Clinical signs include mild to moderate colic signs (flank-watching, lying down, pawing the ground), decreased appetite and mild elevations in heart rate.

Treatment includes fluids including water, electrolytes and laxatives such as magnesium or sodium sulphate (maximum of 1-2 doses of magnesium sulphate recommended as this can be irritating to the mucosa) via a nasogastric tube, with analgesics as required. Overhydration with intravenous fluids (eg 2-3 times maintenance rates) may also help. The development of severe caecal distension may indicate that surgery is required due to the potential for rupture of the caecum.

### **Pelvic flexure impaction**

The risk factors for and clinical signs of pelvic flexure impactions are similar to those of caecal impactions. Diagnosis is confirmed by rectal palpation.

Treatment includes water and electrolyte solutions via a nasogastric tube (eg 6L every 4 hours via a nasogastric tube for a 500 kg horse), laxatives such as magnesium or sodium sulphate and liquid paraffin and analgesic if required. Surgical treatment is very rarely necessary unless severe distension of the colon develops.

### **Small colon impaction**

Small colon impactions may respond to similar treatment to that described for pelvic flexure and caecal impactions; however, the degree of colic is often more severe and medical treatment may not be successful. Surgical treatment and evacuation of the small colon may be required.

### **Spasmodic colic**

Spasmodic colic is a condition which is poorly understood. Clinical signs include intermittent, mild to moderate colic, increased intestinal sounds and moderate increases in heart rate. Suggested causes are changes in management, weather, fatigue, irregular feeding or mouldy feed. An association with tapeworm infection has also been suggested. Treatment includes spasmolytics (hyoscine n-butyl bromide) and analgesics, eg alpha-2 agonists such as xylazine, romifidine and detomidine or NSAID's.

### **Sand colic**

Horses grazing on bare pasture and sandy soils are more prone to sand impactions. The site of sand accumulation is usually the pelvic flexure or right dorsal colon. Clinical signs include mild to severe colic, large intestinal distension palpable on rectal examination and stable or deteriorating cardiovascular parameters depending on the presence or degree of endotoxaemia. Faeces can be analyzed easily for the presence of sand by dissolving a sample in water and observing for

sand accumulation. Small amounts of sand are common if the horse is on sandy pasture; however, large amounts are suggestive of sand accumulation.

### **Cyathostomosis**

In temperate climates, small red worms (cyathostomes) can encyst in the caecal and colonic walls over the winter period. Mass emergence the following spring can cause severe diarrhoea, colic and hypoproteinaemia due to protein loss through the damaged colon wall.

Treatment consists of moxidectin or a 5 days course of fenbendazole, in addition to supportive therapy including analgesics and intravenous fluids as required.

### **Peritonitis**

Peritonitis can have various causes, including parasitic infection, abdominal abscesses or neoplasia, uterine tears sustained at foaling and vaginal lacerations sustained at covering or may arise as the result of castration complications. Many cases are idiopathic (of unknown cause). Clinical signs include mild to moderate, recurrent colic, abdominal guarding, tachycardia, tachypnoea, and pyrexia. Abdominocentesis reveals a peritoneal fluid white blood cell count of greater than  $5 \times 10^9$  /L. The cause should be addressed if identifiable. Medical treatment includes broad spectrum antibiotics such as penicillin, gentamicin and metronidazole due to the risk of involvement of enteric organisms. Flunixin meglumine may reduce the risk of secondary adhesion development. Standing abdominal lavage with sterile isotonic fluids may be beneficial.

### **Left dorsal displacement (Nephrosplenic entrapment)**

Entrapment of the colon over the nephrosplenic ligament can cause mild, intermittent or moderate to severe colic depending on the degree of colon distension with gas or ingesta. Diagnosis is made on rectal palpation. Medical treatment includes starving the horse, administration of phenylephrine to cause contracture of the spleen and repeated lunging to try to correct the displacement. Rolling under general anaesthesia may also be attempted. Cases which fail to respond may require surgery. Cases with severe distension or a large impaction should not be lunged due to the risk of rupturing the colon. These horses are likely to require surgery.

### **Meconium impactions in foals**

Signs of meconium impaction include mild to moderate colic and straining (dorsoflexion of the back. Straining and ventroflexion of the back is more commonly associated with a ruptured bladder.) The heart rate may be slightly elevated due to pain. Firm pieces of meconium may be palpable on digital rectal examination. 1-2 phosphate buffered or repeated mild soap, water and lubricant enemas and careful digital evacuation of the meconium if possible, may resolve the impaction. Persistent, more proximal impactions may be responsive to acetylcysteine and sodium bicarbonate retention enemas. A soft Foley catheter is gently inserted into the rectum, the balloon inflated and the enema administered and left in situ for 20 minutes. Surgery is rarely necessary and carries a high risk of adhesion development in foals. Analgesics such as a low dose of hysocine-n-butyl bromide, or butorphanol may be administered if required. NSAID's should be used with caution in foals due to the increased risk of gastric ulceration. It is important to ensure that foals with meconium impactions ingest sufficient quantities of colostrums in the first 8-24 hours, to ensure adequate passive transfer of immunity and energy intake. Colostrum also has a laxative effect.

### **General advice to horse owners for the prevention of colic**

1. Allow access to roughage for several hours each day to allow the horse to “trickle feed” as much as possible.
2. Avoid very coarse roughage which may cause impactions.
3. Avoid giving large amounts of grain as a single feed. Concentrate rations should be split into several feeds if possible.
4. Ensure regular access to sufficient water.
5. Routine dental treatment will reduce the risk of the horse developing impactions or other problems such as mouth ulcers or tooth root infections. .  
Signs of dental abnormalities that require treatment include “quidding” (dropping partially chewed feed) and weight loss.
6. Worm horses regularly (eg every 6-8 weeks in areas with a high density of horses sharing the grazing). Treatments should include a drug which is effective against small red worm larvae (cyathostomes) during the winter and one treatment for tapeworms each year.

### References and further reading

Manual of equine gastroenterology  
Edited by T Mair, T Divers and N Ducharme, (Elsevier Ltd 2002)