Cecal Impaction in Horses

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Recognition of cecal impaction is complicated by subtle signs of pain and the need to identify an impacted cecum on rectal palpation. Once the condition is recognized, it is very important to realize that cecal impactions rupture more readily than other types of impaction. Pain control is important; however, the use of different classes of analgesics requires close patient monitoring to detect deterioration of the condition. Medical treatment includes administration of oral laxatives as well as intravenous and oral fluid therapy.

Cecal impactions are generally presented as fluid filled or solid filled. The latter is an impaction of dehydrated ingesta, whereas the former tends to involve functional failure of the cecum to empty. Fluid-filled impactions tend to occur in hospitalized patients, particularly following orthopedic or ophthalmologic surgery. Because pain plays an important role in disrupting cecal function, horses must be monitored very closely for signs of colic after surgery and must be treated appropriately for pain. If the cecum becomes dysfunctional and fills with fluid, it has a high propensity to rupture early in the disease process. In my opinion, affected horses should undergo surgery as soon as possible to avoid rupture. Conversely, solid-filled impactions are more likely to be associated with a slower onset of colic, similar to impaction of other segments of the large colon; however, solid-ingesta cecal impactions also have a propensity to rupture and, therefore, require early recognition and treatment. Medical therapy can be successful for treating solid-filled impactions; however, if the severity or duration of the impaction is uncertain, surgery should be offered to the owner to reduce the risk of rupture.

Detection
Because most affected horses show only subtle signs of colic, diagnosis is one of the most difficult aspects of managing horses with cecal impaction. Early detection is important because horses with cecal impaction need either a greater degree of medical attention on the farm or early referral for further treatment, possibly including surgery. The difficulty of detection is exemplified by a study in which a veterinary teaching hospital assessed 114 horses with cecal impaction, and the median heart rate was 46 bpm, which is within the normal range. A pain scoring system can be used to help detect behavioral signs of pain due to subtle colic. This scoring system, which has been validated experimentally and in clinical cases of colic, enables veterinarians to determine pain level based on subtle signs, such as head position, response to people or other horses, and the horse’s position in the stall. A horse with its head at or below the level of the withers (FIGURE 1) that is uninterested in feed and is relatively unresponsive to people or other horses would have a high pain score.

For horses with evidence of subtle recurrent signs of colic, rectal palpation is indicated. During rectal palpation, it is sometimes difficult to determine whether the cecum or the large colon is impacted and how extensively the cecum is impacted. Because the cecum is attached to the dorsal body wall by its mesentery and is in a relatively fixed position on the right side of the abdomen, the cecum can be differentiated from the large colon because the veterinarian’s hand cannot be moved all the way over the dorsal aspect of the cecum to its lateral aspect. Conversely, a large colon impaction may move to the right side of the abdomen, but the veterinarian can typically palpate the full circumference of the impaction.

Fluid-Filled Cecal Impactions
In my experience, fluid-filled cecal impactions usually occur in hospitalized or postoperative patients, although some veterinarians

FIGURE 1. A horse with its head at or below the level of the withers that is uninterested in feed and is relatively unresponsive to people or other horses would have a high pain score.
Cecal impaction in horses may be particularly difficult to detect in postoperative equine patients because these patients generally have some degree of depression and typically receive analgesics such as phenylbutazone. This has led to speculation that phenylbutazone may cause cecal dysfunction. However, it is more likely that cecal dysfunction is due to pain for which phenylbutazone has been prescribed. Unfortunately, pain treatment is often insufficient, resulting in accumulation of ingesta in the cecum or the large colon, reduced fecal output (less than three fecal piles per day is abnormal, even in horses in which feed has been withheld because of surgery), and possible impaction.

Solid-Filled Cecal Impactions
Solid-ingesta cecal impactions presumably occur as a result of accumulation of excessive roughage and gradual dehydration of the intestinal contents. However, the cecum may also be more sensitive to prolonged distention, resulting in injury to the smooth muscle and intramural nerves. As a result, there is controversy as to how to treat solid-filled cecal impactions. Clinical signs include a gradual onset of abdominal pain (similar to the development of a large colon impaction) that may last for 5 to 7 days. Reports indicate that once diagnosed, all cecal impactions can be treated successfully with medical therapy. However, patient selection has to be strongly considered. For horses with an elevated heart rate, systemic deterioration, or concerning evidence of continued cecal distention on rectal palpation, surgery is indicated.

Treating Pain in Hospitalized Patients
One of the most effective ways to detect pain is by using a pain scoring system. At North Carolina State University, a pain scoring table is attached to the monitoring sheet of each horse’s stall door so that a pain score can be readily determined by technicians providing patient care. Horses with a score of 0 to 2 show little or no pain; horses that require analgesic intervention typically have a pain score of 6 to 8. For horses with a low score that begins to increase, intermittent or continuous infusion medications can be used to prevent progression leading to surgery. Owners concerned about behavioral changes in their horses, particularly regarding feed intake or the horse’s attitude in its normal environment, may be detecting early signs of colic; therefore, these owner observations should be taken seriously.

Pain management is one of the most rapidly developing aspects of veterinary medicine. It is not normal for horses to show signs of pain, no matter how subtle the clinical signs appear to be. Pain should not be used to keep horses quiet after surgery. Multimodal pain control using NSAIDs and an opiate such as butorphanol has been shown to reduce pain after colic surgery. In one colic study, administration of butorphanol (13 µg/kg/h for 24 hours after surgery) and flunixin meglumine (1.1 mg/kg IV q12h) reduced the number of days of hospitalization and, subsequently, the financial cost.

Horses that receive intensive pain management must be monitored carefully because clinical signs indicating the need for surgery can be masked. If cecal impaction is suspected, rectal palpation should be performed regardless of the clinical parameters.

<table>
<thead>
<tr>
<th>Behavior Category</th>
<th>Score assigned for each behavior of a horse in a stall</th>
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<tbody>
<tr>
<td>Gross pain</td>
<td>None, NA, Occasional, Continuous</td>
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<tr>
<td>Head position</td>
<td>Above withers, NA, At withers, Below withers</td>
</tr>
<tr>
<td>Ear position</td>
<td>Forward; frequent movement, NA, Slightly back; little movement, NA</td>
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<tr>
<td>Location of patient</td>
<td>At door, watching environment, Standing in middle of stall, facing front, Standing in middle of stall, facing side wall, Standing in middle of stall, facing back wall</td>
</tr>
<tr>
<td>Spontaneous locomotion</td>
<td>Moves freely, Occasional steps, NA, No movement</td>
</tr>
<tr>
<td>Response to another horse at stall door</td>
<td>Ears forward; head up; moves toward door, Ears forward; head up; no movement to door, Flicks ears; no movement toward door, No response</td>
</tr>
<tr>
<td>Response to open door</td>
<td>Moves to door, Looks at door, NA, No response</td>
</tr>
<tr>
<td>Response to approaching person</td>
<td>Moves to observer; ears forward, Looks at observer; ears forward, Moves away, Does not move; ears back</td>
</tr>
<tr>
<td>Response to attempt to lift feet</td>
<td>Lifts freely when asked, Requires mild encouragement, NA, Unwilling</td>
</tr>
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Scores from each category are added for a total subjective pain score (0–2: little or no pain; 6–8: analgesia is required). NA = not applicable. Modified from Sellon et al.
Horses may have been attributed to surgery rather than colic. Depression and decreased fecal output in these horses in which evidence of colic went undetected during hospitalization. Owners should be told about the possibility of rupture if the horse is not treated quickly. Cecal rupture has been documented in horses in which the source of oral fluids cannot be passed to ensure that the horse is not refluxing. Investigators assessed colonic ingesta and not cecal ingesta. However, if the horse is not refluxing, intermittent or continuous oral fluid therapy should be considered. Although water is the most obvious choice for oral fluid therapy, better results can be obtained by administering a balanced oral electrolyte solution via a stomach tube. The stomach can hold approximately 6 to 8 L; thus, one-time administration of oral electrolyte solution can be considered for resolving cecal impaction. If signs of colic are noted, a stomach tube should be passed to ensure that the horse is not refluxing. Investigators have overcome this problem by giving a continuous small amount of fluid (1 to 2 L/h) through a small-bore esophageal tube connected to the source of oral fluids. Additional treatments include laxatives, such as mineral oil (2 to 4 L/500 kg, once) or magnesium sulfate (1 mg/kg dissolved in 4 L of warm water up to twice daily for 3 days), administered via a nasogastric tube. Magnesium sulfate has been shown to be more effective for hydrating intestinal contents, whereas mineral oil lubricates impactions but tends to move around them. Mineral oil should be seen around the anus 18 to 24 hours after administration if gastrointestinal motility is normal. Horses should be kept comfortable during medical treatment, and subtle to marked increases in pain should immediately prompt reassessment of the need for surgery. Abdominocentesis can be used to monitor the integrity of the cecal wall, but changes to abdominal fluid typically occur only when the impaction is nearing rupture. In addition, wall thickness progressively increases on abdominal ultrasonography.

Surgical Procedures for Cecal Impaction

Although the intricacies of surgery for cecal impaction may not be of interest to practitioners choosing medical treatment or referral, it is worth knowing what surgical facilities can offer and the controversy regarding surgery of the cecum. Horses with cecal impactions are surgically managed much like colic patients. There is general agreement that the cecum should be exteriorized and evacuated. This can be difficult to accomplish in horses with gross cecal distention because the cecum is tightly attached to the dorsal body wall and because of possible rupture. However, controversy exists regarding whether to bypass the cecum using ileocolic anastomosis after cecal evacuation. This technique was originally developed because, in some horses, the cecum remains or becomes dysfunctional after surgery and requires further treatment. Regardless of the clinical parameters, particularly in horses with an elevated heart rate (>48 bpm) or reduced fecal output. The prognosis for horses with cecal impaction is good.

Critical Points

- Cecal impactions may be particularly difficult to detect in postoperative equine patients because these patients generally have some degree of depression and typically receive analgesics such as phenylbutazone.
- One of the most effective ways to detect pain is by using a pain scoring system.
- Horses with a pain score of 0 to 2 show little or no pain; horses that require analgesic intervention typically have a pain score of 6 to 8.
- If cecal impaction is suspected, rectal palpation should be performed regardless of the clinical parameters, particularly in horses with an elevated heart rate (>48 bpm) or reduced fecal output.
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References


Medical Treatment of Solid-Filled Cecal Impactions

Horses with solid-filled cecal impactions should be well hydrated; for detectable dehydration (>6% of body weight), intravenous fluids should be administered. The most important aspects of fluid therapy are increasing circulating volume and rehydrating tissues, which can be accomplished by using a balanced electrolyte solution. Recent research has shown that while intravenous fluid therapy is critical for horses with marked hypovolemia, oral fluid therapy is very useful for making colonic ingesta more fluid. Oral fluid can get directly to the site of the impaction, whereas intravenous fluids in excess of a horse’s need for circulating volume tend to be cleared by the renal system. Studies on oral fluid therapy assessed colonic ingesta and not cecal ingesta. However, if the horse is not refluxing, intermittent or continuous oral fluid therapy should be considered. Although water is the most obvious choice for oral fluid therapy, better results can be obtained by administering a balanced oral fluid electrolyte solution via a stomach tube. The stomach can hold approximately 6 to 8 L; thus, one-time administration of oral electrolyte solution can be considered for resolving cecal impaction. If signs of colic are noted, a stomach tube should be passed to ensure that the horse is not refluxing. Investigators have overcome this problem by giving a continuous small amount of fluid (1 to 2 L/h) through a small-bore esophageal tube connected to the source of oral fluids. Additional treatments include laxatives, such as mineral oil (2 to 4 L/500 kg, once) or magnesium sulfate (1 mg/kg dissolved in 4 L of warm water up to twice daily for 3 days), administered via a nasogastric tube. Magnesium sulfate has been shown to be more effective for hydrating intestinal contents, whereas mineral oil lubricates impactions but tends to move around them. Mineral oil should be seen around the anus 18 to 24 hours after administration if gastrointestinal motility is normal. Horses should be kept comfortable during medical treatment, and subtle to marked increases in pain should immediately prompt reassessment of the need for surgery. Abdominocentesis can be used to monitor the integrity of the cecal wall, but changes to abdominal fluid typically occur only when the impaction is nearing rupture. In addition, wall thickness progressively increases on abdominal ultrasonography.

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