What Is Your Diagnosis?

History

A 1-year-old Thoroughbred colt was evaluated after developing signs of severe abdominal pain. The horse had signs of pain for <12 hours, and administration of sedatives, analgesics, and mineral oil failed to resolve clinical signs. On physical examination, the horse was alert and responsive with abrasions above both eyes and trauma to the ventral aspect of the pectoral region (consistent with rolling due to severe abdominal pain). The horse had mild tachycardia (51 beats/min) along with mild tachypnea (30 breaths/min). The oral mucous membranes were pale pink, with a prolonged capillary refill time of 3 seconds. Intestinal borborygmi with a fluid-like character were present in all 4 quadrants. Nasogastric intubation resulted in recovery of minimal net reflux of thick ingesta and mineral oil. Abdominal palpation per rectum revealed gas-distended large colon cranially and 1 loop of distended small intestine. Cytologic evaluation of a peritoneal fluid sample revealed a mildly increased protein concentration of 2.6 g/dL (reference range, 0.1 to 2.5 g/dL) and WBC count of 1,700 cells/µL (reference range, 50 to 5,000 cells/µL), with a distribution of 43% neutrophils and 57% lymphocytes. The WBCs appeared slightly degenerated. Transabdominal ultrasonography was performed (Figure 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →

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Diagnostic Imaging Findings and Interpretation

In the first ultrasonographic image (obtained slightly to the right of ventral midline in the middle third of the abdomen), a thick, hypoechoic ring bordered by 2 hyperechoic rings is viewed within a thin-walled structure that resembles the right ventral colon or base of the cecum (Figure 2). The 2 hyperechoic rings represent the serosal and mucosal surfaces of an apparently edematous wall of the cecum. The central area of the image is anechoic, consistent with fluid located within a cecal inversion. Surrounded by the anechoic fluid are 2 well-margined, hyperechoic structures extending from the edematous wall, consistent with cecal mesentery. The second ultrasonographic image was obtained slightly to the right of ventral midline but more cranially than the first image. Within the hyperechoic colonic or cecal contents, the combination of the hypoechoic ring bordered by concentric hyperechoic rings, with central anechoic fluid containing hyperechoic cecal mesentery, resembles a target (ie, a bull’s-eye sign). Compared with the first image, the entirety of the intussusceptum is smaller and more round, resembling the apex of the cecum.

The ultrasonographic findings are consistent with a cecocecal or cecocolic intussusception, although the ventral location is more consistent with cecocolic intussusception, considering that cecocecal intussusception is more commonly found closer to the right paralumbar fossa. These image findings also indicate that the cecum is inverted rather than telescoped into the right ventral colon. Only 1 cecum wall is detected rather than 2 entering and exiting walls of cecum, and the mesentery and abdominal fluid are located in the center of the intussusception.

Treatment and Outcome

The horse underwent abdominal surgery for correction of the suspected intussusception. During surgery, a cecocecal intussusception was found with the entire cecal body having intussuscepted into the right ventral colon through the cecocolic orifice. Attempts at manual reduction of the intussusception were unsuccessful. A right ventral colotomy was performed, followed by a partial typhlectomy, because most of the cecum appeared nonviable. An ileocolostomy was also performed to bypass the remaining cecal stump without transecting the ileum. The horse was discharged from the hospital 13 days after initial evaluation.

Comments

Cecocolic intussusception is rare in horses and occurs when the cecal apex invaginates into the cecal body and continues through the cecocolic orifice into the right ventral colon. Clinical signs vary because horses can develop acute, subacute, or chronic forms of this condition. The acute form is associated with moderate to severe signs of pain owing to ischemic necrosis of part or all of the invaginated cecum. The subacute and chronic forms often are accompanied by intermittent mild to moderate signs of pain, with loss of condition occurring with more prolonged disease. As with most cases of cecal dysfunction, the etiology is unknown. Potential mechanisms are altered motility, dietary changes, cecal wall abscess, and administration of organophosphates or parasympathomimetic drugs. Tapeworms, specifically Anoplocephala perfoliata, have been associated with cecocecal and cecocecal intussusception, but no causal relationship has been established.

Diagnosis of cecocecal intussusception can prove difficult. Findings on abdominal palpation per rectum may be unremarkable, or one may detect the absence or abnormal position of the cecum or perhaps a mass or edematous viscus in the right caudal aspect of the abdomen. Cytologic evaluation of a peritoneal fluid sample collected by abdominal paracentesis may also yield normal findings, given that the intussusceptum can be sequestered inside the large colon, with changes in the
peritoneal fluid only occurring with time and worsening of disease, if at all.\textsuperscript{1,2} Abdominal ultrasonography may help with detection, with the classic target or bulls-eye sign being found in the upper right abdominal quadrant extending cranially.\textsuperscript{4} In the horse of the present report, the classic ultrasonographic signs were found in images of the ventral portion of the abdomen. Ultimately, it is not uncommon for a cecocolic intussusception to be detected only at surgery, performed after the horse has become unresponsive to medical treatment.\textsuperscript{1–3,5}

Correction of cecocolic intussusception in horses requires surgical intervention. Several techniques exist, including manual reduction or reduction through colectomy. If neither of these is possible, cecal amputation via colotomy has been described.\textsuperscript{1,6} Usually, some or all of the cecum is devitalized, requiring a partial or total typhlectomy with or without ileocolostomy.\textsuperscript{1}

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