Spiral colon intussusception in a three-year-old bull

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A 3-year-old Charolais bull was referred because of a 3-day history of dullness and anorexia. Physical examination revealed the bull to be mildly dehydrated and listless, with moderate symmetrical distention of the abdomen. Values for rectal temperature, pulse, and respiratory rate were 39.5 C, 80 beats/min, and 30 breaths/min, respectively. Rumination were weak, infrequent, and irregularly spaced; however, borborygmi were more prominent in the right ventral portion of the abdomen. The bull was observed to strain on defecation and passed scant, pasty feces that contained a 10 × 1-cm shred of sloughed intestinal mucosa. Palpation per rectum revealed multiple loops of the small intestine to be distended and the cecum to be large and gas-filled.

Differential diagnosis included dilatation or volvulus of the cecum and small intestinal obstruction. Because of the degree of small intestinal distention, a decision was made to immediately perform a standing right flank exploratory celiotomy. A proximal paravertebral block provided analgesia to the surgical site. On entering the abdominal cavity, multiple liters of yellow peritoneal fluid containing numerous fibrin clots flowed from the flank incision. The small intestine, cecum, and proximal loop of the ascending colon were distended with fluid and gas, but were in normal position. Exploration of the caudal right quadrant of the abdomen revealed a firm tubular mass approximately 15 × 25 cm in size. Visualization of the mass was accomplished by pulling the omental curtain cranially and gently easing the mass toward the incision. The mass involved the large intestine, was tubular in shape, and was invaginated at one end. Surrounding tissue was hemorrhagic and friable. Fibrin tags were adhered to the region. An abscess was suspected. Because of the compromised appearance of the mass, and also because of our inability to expose the affected region for surgical resection in the standing animal, the bull was euthanatized.

Necropsy revealed an intussusception of the spiral colon beginning 70 cm distal to the ileocolic junction. The intussusception involved approximately 40 cm of the first centrietal gyrus of the spiral loop. The intussusception was severely compromised and covered with dense fibrin deposits. It was not possible to determine whether there was a mural lesion that may have predisposed this portion of the gastrointestinal tract to intussusception.

Although intussusception is not a common gastrointestinal condition in cattle, it is the most frequent cause of intestinal obstruction in that species. The most common cause of intussusception in adult cattle is a condition primarily affecting the young. Intussusception may go undiagnosed in young cattle because of the difficulty in recognizing the condition or distinguishing it from other forms of enteric disease.

Four types of intussusception can potentially develop in cattle. These are enteric, ileoceccolic, cecocolic, and colic. With few exceptions, virtually all intussusceptions in adult cattle are enteric. Most of these involve the distal portion of the jejunum and proximal portion of the ileum, because these regions have the longest and most mobile mesenteric attachments. Ileoceccolic and ileocolic intussusceptions are almost unknown in adult cattle perhaps because of the stability provided by the ileoceccal ligament. A review of the literature revealed only 1 case of ileoceccolic intussusception in an adult cow. Cecocolic and colic intussusceptions also appear to be rare. Cecocolic intussusception has been reported in a 3-year-old Friesian cow, and intussusception involving the spiral colon has been reported in a 10-month-old Holstein heifer. The 3 nonenteric forms of intussusception seem to develop more in calves, probably because the thinner nature of the mesenteric sheet in calves does not provide the same degree of stability to the various regions of the intestinal tract as in adults.

The condition identified in the bull of this report was unique in that it involved an intussusception of the spiral colon in an adult bovid. Intussusceptions in this region tend to be prevented by the extremely restrictive association of the loops of
spiral colon to the mesenteric sheet. Neither an acquired nor a congenital abnormality of the mesenteric sheet was noticed at necropsy, which could have explained why this form of intussusception developed. In adult cattle, intramural or intraluminal growths or masses often are found within the intussusception and act as predisposing causes. Examples of such lesions include papillomas, abscesses, tumors, and parasitic nodules. In Bosshart’s report of 36 cases of intussusception in cattle, all had an abscess or growth within the resected intestine; however, only 2 of 15 cases reported by Pearson were found to have a predisposing intramural or intraluminal lesion. Unfortunately, the bull of this report did not receive medical assistance until late in the course of the disease, and the intussusception was extremely necrotic and covered with dense fibrin deposits, making identification of a predisposing lesion impossible.

The 10-month-old Holstein heifer with intussusception of the spiral colon had an 18-hour history of colic. At surgery, the intussusception was reduced by gentle traction and the heifer recovered. The bull in this report had no history of colic; however, the owner may not have noticed the early stages of this condition, because the bull was on pasture. Had traction been applied to the intussusception, the sequella would have been rupture and peritonitis because of the degree of necrosis.

Surgical resection of the lesion in the bull of this report would have been difficult, because the location of the intussusception prevented even partial exteriorization in the standing animal. Had the value of the animal justified it, the bull could have been anesthetized and the flank incision lengthened. This would possibly have allowed for enough exposure of the spiral colon to perform a resection and anastomosis. A disadvantage to resection and anastomosis at this site is that it also requires mesenteric resection, thus, interrupting vessels feeding the jejunum and remaining spiral colon. Another surgical alternative could have been to perform a bypass of the spiral colon as described by Smith and Donawick. In this case, the ileum could have potentially been anastomosed to the centrifugal (outward progressing) spiral colon by a standard side-to-side suture technique. The long-term fate of such bypassed intestine is unknown. In this bull, we would have had to be concerned about leaving such an extensive piece of necrotic intestine (40 cm) in situ.