

Case Report—Intestinal Obstruction in a Steer

Kevin E. Washburn, DVM, DABVP (Food Animal)
Food Animal Resident, Department of Veterinary Clinical Sciences
Oklahoma State University, Stillwater, OK 74078

Abstract

A 550 lb steer was presented with a history of anorexia, depression, “stiffness”, and scant feces. Physical examination revealed a normal rectal temperature, increased heart and respiratory rates and abdominal distension. The initial attempt to examine the steer per rectum was unsuccessful. Laboratory findings were normal except for increased protein in the abdominal fluid. A second examination of the abdomen per rectum revealed a tight, fibrous band extending from the right internal inguinal ring to the pelvic floor, which had entrapped portions of the small intestine.

An exploratory laparotomy was done using the right paralumbar fossa approach. The tight fibrous band was found to be a remnant of the vas deferens. The band was exteriorized and cut with scissors. Post-operative recovery was uneventful and the steer was marketed months later at his projected market weight.

Introduction

Intestinal obstruction in young calves is an uncommon diagnosis. These calves often exhibit abdominal discomfort, scant feces, anorexia and abdominal distension. Differential diagnosis for abdominal discomfort in steers include urolithiasis, ruminal tympany, intussusception, intestinal volvulus, traumatic reticulopericarditis/peritonitis, vagal indigestion and intestinal incarceration/obstruction. Determining an accurate diagnosis and course of therapy is aided by the history, physical examination and laboratory findings. Often, due to the behavior of the animal or lack of adequate working facilities, physical examination is difficult to thoroughly perform.

This report describes the diagnosis and treatment of incarceration of the jejunum by a remnant of the vas deferens, an uncommon and often overlooked etiology of intestinal obstruction in steers less than one year of age. In describing this case, the value of a thorough physical examination is demonstrated to be critical in the diagnosis.

History

A 550 lb (250 kg) eight-month old steer was presented with a history of anorexia, depression and “stiffness” of two days duration. The owner reported that the calf had not passed any feces during the last few days. The calf had been castrated through a scrotal incision, followed by traction on the cord five months earlier when the calf weighed approximately 120 lb (55 kg). No complications were observed.

Clinical and Laboratory Findings

Physical examination revealed depression and signs of abdominal discomfort. The abdomen was distended ventrally and bilaterally. The heart rate was 80 beats per minute (tachycardia), the respiration rate was 35 breaths per minute (tachypnea), and the rectal temperature was 102.6° F (39.2° C). Mucous membrane color and capillary refill time were within normal limits. One complete rumen contraction per minute was ausculted. High-pitched “pings” were ausculted in the ventral one-third of the right paralumbar fossa. Abdominal palpation per rectum was difficult and inconclusive due to the fractious temperament of the calf, however, feces was absent. At that time, the calf voided a normal stream of urine. Laboratory diagnostics included a complete blood count, serum chemistry and electrolyte profile and abdominocentesis. The only abnormality noted was an elevation in the abdominal fluid protein (3.5 g/dl, normal range 0.0 to 2.0 g/dl). This suggested abdominal disease, therefore, a second trans-rectal examination was done under caudal epidural anesthesia using 5.0 mls of 2 % lidocaine hydrochloride. A tight fibrous band of tissue in the caudoventral abdomen, originating from the right internal inguinal ring and extending to the pelvic floor, was palpated. Segments of distended bowel were also detected. Because intestinal obstruction was suspected, a right paralumbar fossa laparotomy was elected for diagnostic purposes and treatment.

Surgical Procedure

The right paralumbar fossa was surgically prepared and anesthetized with local infusion of 2% lidocaine hydrochloride in a line block pattern. An eight inch (20 cm) vertical incision was made 1.6 inches (4 cm) caudal to the last rib. Abdominal exploration revealed a tightly stretched band of tissue extending from the pelvic floor to the right internal inguinal ring, entrapping a segment of distended jejunum. The band of tissue, determined to be a remnant of the vas deferens, was exteriorized and transected with Mayo scissors, observed for bleeding, and released. The exploration of the abdomen was completed, and no further abnormalities were found. The section of jejunum which had been entrapped appeared viable. The incision was closed using routine 3-layer closure, and 30 ml of procaine penicillin G was administered intramuscularly. The owner was instructed to feed only hay for 2 days before placing the calf back on a concentrate diet. Within 24 hours of surgery, the calf was eating and passing large volumes of feces. Seventy-two hours following surgery, he was returned home to the other steers. The owner reported that the steer completed the feeding period and reached market weight with his penmates.

Discussion

Based on the physical examination, the problem list included mild colic, abdominal distention, scant feces, tachycardia, tachypnea and auscultable abdominal "pings". The differential diagnosis included intestinal incarceration/obstruction, intussusception, intestinal volvulus, cecal torsion, traumatic reticulopericarditis/peritonitis ("hardware"), urolithiasis and vagal indigestion. Less common causes of scant feces include abdominal masses (abscess or neoplasia), mesenteric fat necrosis, or a foreign body. The leukogram, serum fibrinogen, and serum chemistry findings were within normal limits and did not indicate an inflammatory process such as "hardware"; however, the elevated abdominal fluid protein level suggested abdominal disease. This calf was too old for intestinal atresia or stenosis to be likely. Mesenteric fat necrosis or an intestinal mass was an unlikely diagnosis due to the normal leukogram and fibrinogen. Urolithiasis was ruled out because the calf voided urine normally and was not azotemic. Vagal indigestion may cause mild colic, therefore, it could not be ruled out. Causes of intestinal obstruction leading to scant feces remained on the differential list.

Since the laboratory findings were not conclusive, a second rectal examination was performed utilizing caudal epidural anesthesia in an attempt to palpate evidence of obstruction (distended bowel loops) or intussusception. An exploratory laparotomy was indicated when the band of tissue extending from the pelvic floor

to the inguinal ring was palpated. The surgery proved to be both diagnostic and therapeutic. Rupturing the band of tissue by means of trans-rectal palpation has been reported, however, the small size and fractious temperament of this calf made this method of repair potentially unsafe.⁵

The incarceration of a segment of jejunum by a remnant of the vas deferens has not been widely reported, but should be considered when any steer is presented with a history of mild colic, scant feces, abdominal distention and anorexia. This condition most commonly occurs in older steer calves (450-650 lb; 200-300 kg) that were castrated at a young age (100-200 lb; 45-100 kg). Castrating young bulls by making a scrotal incision and placing traction on the spermatic cord until it ruptures has been reported to create an acquired hernial ring formed by a hiatus between the lateral abdominal or pelvic floor and the ductus deferens.⁵ In this hernial ring, the recoiled ductus lies as a free band in the abdominal cavity attached to the abdominal wall.⁵ This free band of tissue increases the chance of small bowel incarceration with subsequent progressive obstruction.⁴ Diagnosis is based on ruling out other diseases and trans-rectal palpation of a tight band of tissue in the caudal abdomen. Early diagnosis followed by surgical correction can lead to dramatic recovery.

Other techniques of castration, such as emasculation, are thought to reduce the incidence of hernial formation with subsequent ductus recoil.⁶ Remnants of the round ligament of the liver,² urachus,¹ omphalomesenteric duct³ and the umbilical vein² have also been reported as causes of acute colic and abdominal distension.

Summary

The cause of intestinal obstruction in this steer is uncommon. This case demonstrates the importance of performing a complete physical examination, no matter how trying, and considering some of the less common causes of intestinal obstruction.

References

1. Baxter GM, Darien BJ, Wallace CE: Persistent urachal remnant causing intestinal strangulation in a cow. *J Am Vet Med Assoc* 191:555-558, 1987.
2. Ducharme NG, Smith DF, Koch DB: Small intestinal obstruction caused by a persistent round ligament of the liver in a cow. *J Am Vet Med Assoc* 180:1234-1236, 1982.
3. Koch DB, Robertson JT, Donawick WJ: Small intestinal obstruction due to persistent vitelloumbilical band in a cow. *J Am Vet Med Assoc* 171:197-199, 1978.
4. Scott PR, Kinder AE, Blake NA, Hawe C: "Gut-tie" in a recently castrated steer. *Vet Rec* 140:559-560, 1997.
5. Weaver AD: Surgical correction of jejunal obstruction by ductus deferens (gut tie). *Bovine Pract* 22:168-169, 1987.
6. Wolf DF, Mysinger PW, Carson RI, et al: Incarceration of a section of small intestine by remnants of the ductus deferens in steers. *J Am Vet Med Assoc* 191:1597-1598, 1987.