

Research Summaries 1

Duodenal Obstruction Caused by Volvulus of the Duodenal Sigmoid Flexure in Dairy Cattle

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Introduction

Duodenal obstructions are uncommon in cattle. Recently, a new condition clinically resembling abomasal volvulus (AV) but affecting the duodenal sigmoid flexure (SF) has been recognized in dairy cattle. The purpose of this retrospective study was to characterize this condition and determine the prognosis of cattle undergoing surgery. We hypothesized that values obtained from bloodwork would be of diagnostic value.

Materials and Methods

From December 2006 to March 2010, 25 medical records from the teaching hospital and ambulatory service were analyzed: physical examination, bloodwork, surgical findings, and patient survival. "Survival" was defined as discharge from the teaching hospital or remaining in the herd. Descriptive statistics and a student *t*-test were performed to compare biochemical parameters with cattle diagnosed with AV in our clinic during the same time period. A Fisher's exact test was used to compare the prognosis between the cattle treated at the farm or hospitalized at a teaching hospital. A *P*-value <0.05 was considered significant.

Results

A total of 24 Holstein cows and one Holstein bull were examined because of anorexia, signs of colic, and absence of feces. On physical exam the cattle were normothermic, tachycardic, and moderately dehydrated with scant feces present in rectum. A cranial, right-sided ping with or without succussion, located dorsally at the level of intercostal spaces 10-12, was noted for 20 animals. Biochemical changes were hypokalemia, hypochloremia, and metabolic alkalosis in conjunction with hyperlactatemia and hyperglycemia. Those results, which showed more severe changes, except for the hyperglycemia, were statistically different than the results obtained from AV cattle. Changes indicating cholestasis and hepatocellular necrosis were also noted: elevated bilirubin, gamma-glutamyl transferase, and glutamate dehydrogenase. Except for the increased bilirubin, those results were not statistically different than the results obtained from AV cattle.

Of a total 25 surgeries, 16 were performed at a referral center and nine were done on the farm. Seventeen cattle had previously undergone omentopexy one day to two years before surgery to correct duodenal sigmoid flexure volvulus (DSFV). Surgical findings included: empty descending duodenum alongside a dorsally displaced, dilated cranial duodenum; distended abomasum and gall bladder; and occluding, counterclockwise DSFV. Manual reduction of DSFV was considered successful if the descending duodenum filled after cranial duodenal massage. No attempts were made at attaching the SF. All except seven surgeries were completed without performing an omentopexy or other type of abomasal fixation.

All animals received intravenous crystalloid fluids and antibiotics, while 19 received non-steroidal anti-inflammatory drug (NSAID) therapy. Eighteen of the animals were successfully managed. On necropsy of the remaining seven cows, severe duodenal edema and peritonitis implicating the bile duct were found. These animals all had evidence of duodenal necrosis or focal peritonitis at surgery. For the 18 animals that survived, 13 were hospitalized and five were treated at the farm. There was no statistical difference between hospitalized and on-farm management.

Significance

As the duodenum courses cranially from the pylorus, it forms the SF prior to turning caudally and becoming the descending duodenum. During DSFV, the SF is displaced dorsally in a counterclockwise direction (from behind) prior to creating a volvulus in a counterclockwise direction (from top).

The prognosis of cattle with DSFV is fair whether the case is hospitalized or managed on the farm. However, it is important to realize that cattle treated on the farm need aggressive fluid therapy to recover from this condition. The fact that the duodenum is not pexyed does not seem to favor recurrence. Clinical signs of duodenal and/or abomasal obstruction with severe metabolic derangements and marked elevations in hepatic values suggest DSFV, and immediate surgery is indicated. Veterinarians must be aware of this emergent syndrome in cattle.