Abomasum displacement and volvulus



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Abomasum displacement and volvulus

Definition:

Abomasal displacement occurs either to:

- > the right
- ➤The left side of the abdomen when gas accumulates inside the abomasum.
- Left displacement of the abomasum is most often
- encountered (75%) than the right cases (25%).
- The highest incidence in adult dairy cattle in the early postpartum period.

Etiology

(1) Atony of the abomasum caused by an abnormally high volatile fatty acid (VFA) concentration and continued microbial fermentation of ingesta lead to gas accumulation and resultant distention.

(2) **Displaced abomasums was associated with nutrition** related risk factors, use of minerals and sodium chloride, inadequate concentrates feeding. Moreover hypocalcemia with decreased abomasal smooth muscle tone may also contribute to atony.

(3) **Diets high in starch or deficient in roughage** are commonly associated with abomasal displacement.

[1] Left displacementof the abomasum(LDA):

Abomasal displacement occurs to the left side of the abdomen, where the abomasum located between the rumen and left abdominal wall.



Risk factors:

(1) Cows in early lactation are at greatest risk of developing LDA, (occurred in the first 30 days after calving).

(2) A higher incidence has been reported in late winter/early spring after the winter housing season.

(3) Energy and protein nutrition of the prepartum dry cow may be related to LDA.

(4) **Abomasal atony and or displacement** also occur with hypocalcemia.

Pathphysiology:



Clinical findings:

- (1) Moderate to complete anorexia, feces may be drier than normal or scant and watery with abdominal distension.
- (2) Reduced frequency of rumen contractions.
- (3) The last one or two ribs on the left are sprung, but the abdomen is sunken in the paralumhar fossa.
- (4) Extreme abdominal distention, the abomasum may be visible as a bulge in the left paralumbar fossa.
- (5*) The rumen is not pressed tightly to the abdominal wall when palpated through the left paralumbar fossa.
- (6) During rectal examination the abomasum may be palpated to the left of the caudodorsal blind sac of the rumen.





Position of abomasum (red) and rumen (blue) in a cow with an LDA

(7) The eyes frequently are retracted in the orbit to varying degrees and mild pain.

(8) Elevated pulse to 85 to 90 beats/minute, respirations may be normal or shallow.

(9) Gurgling or tinkling rather than normal scratching sounds may be heard on auscultation in the left paralumbar fossa.

(10) Auscultation and percussion reveal a ping over the gas filled portion of the abomasum. This ping may be extending from the lower third of the abdomen in the eighth intercostal space to the paralumbar fossa. This ping is circular and does not generally extend beyond the last rib so that percussion along a line from the tuber coxae to the elbow is necessary.

(11) Ruminal tympany, pneumoperitoneum and collapsed rumen.

(12) Air in the uterus and dilation and displacement of the cecum to the left of the rumen may also produce left-sided pings.

- (13) An assistant blow on the stomach tube passed into the rumen while auscultation over the left side differentiates the rumen from other structures.
- (14) The retained placenta, ketosis, a stillborn calf, metritis, parturient paresis were associated with abomasal displacement.
- (15) Ketonuria and acetone on the breath are common.

Diagnosis:

It depends on clinical and chemical evaluation of serum electrolyte and acid-base levels.

- The blood pH and bicarbonate concentrations are elevated, with a hypochloremic alkalosis as well as hypoglycaemia and ketonuria. However, excitement or stress may produce hyperglycemia.
- Abomasum reflux in the ruminoreticulum leads to mild metabolic alkalosis.
- Percutaneous needle aspiration of fluid or gas from the suspected abomasum aids in correct identification.
- Abomasal pH of less than 4.5 confirms the presence of LDA.
- The ruminal content of sodium and calcium were reduced, where as potassium, phosphorous and chloride were increased.
- The urine pH often is acidic despite the metabolic alkalosis.
- A reduced abomasal outflow, resulting in dehydration and disturbances of blood acid-base-balance (hypochloremic alkalosis).



Auscultate and percuss (firmly) to identify abnormal 'ping' (can indicate right displaced abomasum or abomasal/caecal torsion)

Treatment:

(1) Treatment for LDA involves returning the abomasum to its normal anatomic location, also treating and correction of electrolyte and acid-base abnormalities, and providing therapy for concurrent disease conditions.

(2) The nonsurgical approaches involve casting the cow on her right side, rolling her into dorsal recumbency. The cow is then allowed to stand. The gas in the abomasums causes it to float to a ventral location when the cow is in dorsal recumbency.

(3) The surgical approaches for correction and or fixation. Complications involving abscess formation, herniation, suturing of the rumen, and pyloric obstruction



Prevention and control:

(1) Dietary manipulation to reduce abomasal atony caused by highconcentrate rations as well as gradual introduction of concentrates after calving, prepartum introduction of ensiled and concentrate feeds, an increase in the particle size of the forage.

(2) Prevention of hypocalcemia.

(3) Reduction in other periparturient inflammatory diseases such as mastitis and metritis.

[2] Right Displacement of the Abomasum (RDA)

Abomasal displacement occurs to the right side of the abdomen, where the abomasum located between the liver and right abdominal wall. RDA occurs at about 10% to 15% the frequency of LDA. The predisposing causes, pathophysiologic mechanisms, clinical pathologic conditions, and epidemiologic characteristics are the same as LDA.

Clinical findings:

(1) The general systemic state of the cow with RDA is the same as in LDA.

(2) An area of tympanitic resonant is heard on the right side with auscultation and percussion.

(3) The condition must be differentiated from other causes of right-sided pings, such as cecal distention (with or without volvulus), gas in the spiral colon, pneumorectum after rectal examination, pneumoperitoneum, physometra (gas in the uterus), and abomasal volvulus.

(4) The ping usually is confined to an area under the last five ribs in the upper half of the abdomen. Cecal and rectal pings usually are detectable in a linear pattern just below the transverse processes of the lumbar vertebrae extending to the tuber coxae.

(5) The rectal examination identifies the gas-filled structure of abomasums and the spiral colon may be palpated laterally flattened, mildly distended. Abomasal volvulus in an early case is the most difficult to differentiate from RDA. With time the cow becomes progressively more dehydrated and more severely ill with volvulus than is usual with RDA. Later on a ping caused by the fluid level in the abomasums occurs.

Treatment:

(1) The surgical treatment.

(2) Rolling for nonsurgical correction is contraindicated

because of the risk of creating abomasal volvulus from a

RDA.

(3) The prognosis for a successful recovery after surgery is comparable to that for LDA.

[3] Abomasal volvulus (Right torsion of the abomasum):

Abomasal volvulus is a sporadic disease that proceeds by RDA. Right torsion of the abomasum, (RTA), leads to complete obstruction of the flow of ingesta through the duodenum.

Pathphysiology

(1) Risk factors predisposing to LDA or RDA probably contribute to the pathogenesis of RTA. Whether true RDA precedes RTA is not known.

(2) Dehydration and cardiovascular collapse occur in more prolonged cases.

(3) Earlier cases have acid-base and electrolyte abnormalities (hypochloremic, metabolic alkalosis, hypokalemia) as in LDA but more marked

(4) In cases of severe distention of the abomasum and omasum with vascular compromise, systemic cardiovascular insufficiency develops.

(5) The rotation probably occurs most frequently at the reticuloomasai junction.

(6) The duodenum is looped around the omasum, regardless of the degree of volvulus.

(7) When RTA occurs, the hydrochloric acid is regurgitated from the abomasum to the omasum and rumen so that rumen chlorides increase and the animal becomes alkalotic and hypochloremic.

(8) Potassium moves intracellularly as hydrogen ions move extracellularly in response to the metabolic alkalosis.

(9) Endogenous inflammatory mediators and bacterial toxins may diffuse from the abomasum to viable surrounding tissues, where absorption occurs, the viability of the abomasum is lost, and death follows shortly.

Clinical findings:

- (1) Sunken eyes, loss of skin elasticity, dehydration.
- (2) The heart rate increases above 100 beats/min.
- (3) Abdominal distention is marked bilaterally.
- (4) Complete rumen stasis develops, leading to bloat, and the abomasum greatly enlarges on the right.
- (5) Feces are absent or watery but scant.
- (6) A large area of tympanic resonanic with uniformy is detectable on the right, extending from the eighth rib to the middle of the paralumbar fossa.
- (7) Other causes of proximal intestinal obstruction and torsion of the intestinal mass around the root of the mesentery must be differentiated from RTA.

(8) Rectal examination the abomasum can be felt with RTA. With intestinal obstruction or intestinal volvulus, distended loops of small intestine can be palpated.

(9) The pings caused by gas in the intestines have a variable pitch over the area involved. Cecal distention with rotation can produce a similar degree of abdominal distention high on the right, A ping extends to the tuber coxae, and the cecum can be palpated per rectum.

(10) Diffuse peritonitis leads to complete atony of GIT and the abdomen may become distended with gas in all parts of the tract.

(11) As RTA progresses, cattle become recumbent and depressed.

(12) Death occurs within hours of this stage, which occurs 1 to 3 days after the development of the volvulus.

Treatment:

(1) Immediate surgical intervention.

(2) Correction of fluid, electrolyte, and acid-base abnormalities by IV 0.9% sodium chloride and potassium chloride (less than 1 mEq/kg/hr to prevent K cardiotoxicity).

(3) For advanced cases with metabolic acidosis, balanced electrolyte solutions such as Ringer's solution are indicated.

(4) Broad-spectrum antibiotics.

(5) Nonsteroidal anti-inflammatory drugs may be indicated if shock has developed.