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Vagal Nerve Paralysis in a Cow.

The case described illustrates a possible syndrome due to paralysis of vagal nerve branches in cattle.

A 10-year old Holstein cow was entered into the veterinary clinic at Iowa State College in August of 1957 with a history that pointed to a variety of possible causes for her illness. She gave birth to twins 7 months previously, and 2 weeks later she lost her appetite and began losing weight. She made some recovery, but continued to have a poor appetite and continued to lose weight. For about a month she had been standing with her head thrust forward and upward, and recently she had shown lameness in one leg. No history was given of abdominal pain, and she was not pregnant.

The most obvious symptoms were labored breathing, abdominal distention, and emaciation. She stood with her head held forward, her nose upward, and her nostrils constricted and dilated excessively with respirations. Breathing was aided by abdominal muscle contraction. The abdomen seemed too full, showing extreme distention low on the right side and fullness and tenseness in the left paralumbar fossa. The rumen felt doughy in the left paralumbar fossa as well as by rectal palpation; rumen movements were sluggish. The enlargement on the right side felt tympanitic. Her appetite was quite good, and her feces were normal, though scant. She belched excessively. A blood count revealed her to be low in total red cells and white cells. Her uterus felt normal; she had chronic mastitis; her temperature, heart, and lungs were normal. It was thought that peristaltic sounds could be heard over the area of lung auscultation, but this may have been sounds from her frequent eructations. A diaphragmatic hernia was strongly suspected, based upon the respiratory symptoms, digestive sounds over the area of lung auscultation, chronicity of the disease, and lack of response to previous treatment. Even the abdominal distention would be explainable due to a displacement of some of the abdominal viscera. However, the odds were against finding a diaphragmatic hernia. Here at Iowa State College, of 480 exploratory laparotomies performed, only three diaphragmatic hernias have been seen.

Although an exploratory laparotomy was recommended, the owner chose to have the cow euthanized and a necropsy performed. Necropsy revealed extensive adhesions between the reticulum, liver, and diaphragm; no hardware was found, although it was believed to have been the cause of the adhesions. There was dilatation of the stomachs and intestines due to paralysis of some of the branches of the vagus nerves. The stomachs were full of ingesta, but the intestines were relatively empty; this was probably due to partial pyloric stenosis.

Clark (1953) describes the clinical signs of vagal nerve injury as (1) distention of the reticulum and rumen or omasum and abomasum with ingesta, (2) scanty amounts of feces voided, (3) rumen motility usually present early in the disease, possibly disappearing later, (4) dehydration and hemoconcentration, (5) prolonged course (3 to 4 weeks), and (6) inappetence and lack of rumination. He describes the post-mortem lesions as (1) abomasal ulcerations, (2) distention of either the first two or third and fourth compartments of the stomach, (3) adhesions due to traumatic reticulitis, and (4) little material in the intestines.

Left and right vagus nerves branch, anastomose, and rebranch within the thorax to form dorsal and ventral esophageal
trunks which pass through the hiatus esophageus on the dorsal and ventral surfaces of the esophagus respectively. Once within the abdominal cavity these trunks branch freely to supply the parasympathetic innervation to all the compartments of the stomach and the intestines. The action of the parasympathetic system is to regulate motility of the gastrointestinal tract and inhibition of contraction of the pyloric sphincter and the reticulo-omasal orifice. Any combination of branches of the vagi may be injured by disease processes occurring near them, and there are a variety of possible resultant syndromes.

This case report has illustrated vagal nerve paralysis due to peritonitis with adhesions which was probably caused by a foreign body penetration from the reticulum. The result was atony of the gastrointestinal tract and probably incomplete pyloric stenosis.

REFERENCE

Robert Billiar '58

Umbilical Hernias in Twin Calves. On October 10, 1957, twin Holstein heifer calves were admitted to Stange Memorial Clinic. Both calves had umbilical hernias of almost identical size, and from involvement and connective tissue deposition appeared to have been present about the same length of time. In fact, the hernias were probably present at birth and of hereditary origin.

The animals were prepared for surgery. Each calf was given approximately 30 ml. of pentobarbital sodium intravenously to carry it into surgical anesthesia. The abdomen in both cases was shaved and then disinfected with alcohol.

An elliptical incision was made in the skin around the umbilicus in each case. The hernial sacs were dissected free from the surrounding tissue.

In the first calf the peritoneal cavity was opened. The peritoneum was sutured with Vetafil (synthetic suture material, Bengen and Co., Hannover, West Germany) using a continuous horizontal mattress stitch. The ring could not be drawn closed so plastic mesh was sutured over the opening. The subcutaneous tissue and skin were sutured with nylon using two sets of continuous blanket sutures, interrupted at mid-incision.

In the other heifer the sac was freed of its contents and the muscles were sutured together with No. 3 catgut using horizontal mattress sutures to close the ring. The subcutaneous tissue and skin were sutured with an interrupted mattress stitch using nylon.

No aftercare or antibiotics were required and the calves were sent home the day following surgery.

—Jim Ahern '58

Foreign Body in the Orbit of the Eye. On October 17, 1957, a 2-year old American Saddlebred gelding was admitted to the Stange Memorial Clinic. The only history given was "something wrong with the right eye". Examination showed a soft swelling in the area of the lower eyelid. A hard object could be palpated in this area. There was also considerable exudate present on the eye, but no break in the continuity of conjunctiva or skin.

Due to the hard object which could be palpated a foreign body was suspected. An X-ray was taken, but no foreign body could be seen on the radiograph.

For the next 3 days the area was treated by hot-packing. This seemed to reduce the exudation somewhat and also reduced the pain.

On October 21 the horse was given 3 cc. of promazine hydrochloride (50 mg./cc.) and restrained on its left side on the operating table. One hundred ml. of a solution containing 4.26 Gm. chloral hydrate, 0.96 Gm. pentobarbital, and 2.12 Gm. magnesium sulfate were given intravenously after the horse was on the table.