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Diagnosis and Treatment of Traumatic Gastritis

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TRAUMATIC gastritis is a common affliction of the bovine, especially of dairy cattle. The eating habits of this species predispose to traumatic gastritis because food is swallowed with little or no mastication and such objects as nails, wire, and fence staples are easily ingested. These objects usually lodge in the reticulum where, because of its structure and location, penetration often occurs. Penetration of the wall of the rumen is rare. Traumatic gastritis is seen most often in dairy cows by reason of their numbers and the age to which they are kept. The condition is not rare in the beef breeds, especially in stock cows and bulls. It is seen most often in animals three or more years old, but even calves and yearlings may be affected.

The field diagnosis of traumatic gastritis can usually be accomplished by careful consideration of the history and symptoms presented. In addition an electronic metal detector may be used to good advantage in determining the presence of metal objects in the reticulum.

In relating the history of an acute attack the owner reports the animal suddenly off feed, constipated, and showing a rapid drop in milk production. In a large percentage of cases the patient is in advanced pregnancy, has recently calved or

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jects most often found in the reticulum. Some farmers who have changed over to field choppers where they formerly baled hay have been troubled by a great deal of traumatic gastritis in their stock. The choppers pick up old fence and baling wire that has accumulated in the fields and cut it up to a size that is easily swallowed by cattle.

The most common symptoms seen in traumatic gastritis are those of an acute circumscribed peritonitis. Breathing may be rapid and shallow, and inspiration may be followed by a painful grunt in many cases. The inflammation of the diaphragmatic peritoneum (and possibly pleura) often gives rise to referred pain over the withers. A slight pressure in this area will bring a strong pain response from the patient. Sometimes pressure on the withers elicits only a slight grunt which can best be heard by placing a stethoscope to the trachea. The pressure should be applied to the withers during inspiration. This response is quite diagnostic, however, it may never be shown or may disappear 2 or 3 days after the onset.

Pressure over the region of the reticulum and xyphoid cartilage frequently gives a pain response, and in many cases the animal stands with one or both elbows abducted. Another common symptom is a hump-backed stance and stiffness with reluctance to move. There may be painful grunting with each step taken, and it is often difficult to make the animal move down a steep incline. Ruminations are usually weak or absent, and constipation noted in most cases.

During the first day or two of an attack the temperature will usually be about 103 to 104 degrees. This is followed by a drop to about 102 degrees and very often this will be the state of the temperature when the veterinarian is first called. A temperature over 104 degrees usually indicates the development of pneumonia, acute pericarditis, abscess formation in the liver or spleen, or acute diffuse peritonitis. The heart rate will be about 80, but may reach 100 or more if the temperature is high.

In many cases the initial attack progresses no farther than a circumscribed peritonitis. Short objects are rapidly walled off, the acute symptoms will subside within a few days, and the animal will be well on the way to recovery in a week or 10 days. The foreign body may cause subsequent attacks, especially during advanced pregnancy or parturition when pressure from the weight of the calf or from straining starts it traveling through the tissues again.

Chronic peritonitis may develop from an acute attack. In such cases symptoms will be absent when the lesions are not extensive, but extensive adhesions may result and can result in stiffness, chronic bloat, or general unthriftiness. There may be recurrent attacks of "indigestion" and gradual debilitation.

Long objects which penetrate the reticulum are less easily walled off by the inflammatory reaction. These are more often fatal, going on to cause an acute diffuse peritonitis or an acute pericarditis. In both of these cases the temperature tends to be high, over 104 degrees, and the pulse will be from 80 to 120.

In suspected traumatic gastritis the heart should always be auscultated because of the great possibility of foreign body penetration of the pericardial sac. Not infrequently friction sounds are heard, indicating a fibrinous pericarditis. Occasionally heart sounds will be absent or barely audible on the left side. This can be taken as an indication of a pericarditis with a large amount of exudate and/or fibrin in the pericardial sac, so that transmission of the heart sounds through the body wall is prevented. Splashing sounds synchronous with heart beat indicate the presence of gas within the pericardial sac. In acute pericarditis pain can almost always be caused by a blow to the chest wall behind the olecranon.

Frequently the pericarditis becomes chronic, leading to gradual emaciation, the development of symptoms of heart failure, and death. In cases of chronic pericarditis the temperature will usually be in the normal range. Frequently when the veterinarian is first called the symptoms of extreme heart weakness will not have developed. Auscultation of the heart
generally will reveal cardiac lesions. Later there will develop such symptoms as cyanosis, coughing, anemia, edema of the underline, and distended, pulsating jugular veins. These cases should be salvaged by immediate slaughter.

Pleuritis and pneumonia may develop from traumatic gastritis but this does not commonly occur. These conditions can be diagnosed by the respiratory symptoms shown, dyspnea, coughing, moist rales, and friction sounds due to the deposit of fibrin on the pleura. Pleuritis may take a chronic course over 2 to 6 months with gradual emaciation (Udall). Lung involvement can lead to pulmonary interstitial emphysema, which will be shown by dyspnea and extensive subcutaneous emphysema.

When the history of an animal and the symptoms shown indicate traumatic gastritis, an electronic metal detector may be used to determine the presence of ferric metal in the reticulum. A positive reaction serves to strengthen one's position in diagnosis and usually convinces the most doubtful client. The detector head is passed slowly over the lower chest wall in the region of the xyphoid cartilage. A ten penny nail four to five inches deep in the tissues will cause a response. In about 20 percent of the cases operated metal will be found though the detector shows nothing. Metal will frequently be detected posterior to the seventh intercostal space, but it may be ignored as it is in the rumen and rarely causes trauma.

The Magnaflux Corporation of Chicago manufactures a detector which measures approximately 7 x 7 x 20 inches and which weighs 24 pounds. It may be conveniently carried in the practitioner's car. This detector operates on ordinary 110 volt alternating current. It is a useful instrument in a dairy practice, but one must fully realize its limitations and use it only as an adjunct to a diagnosis based on history and symptoms.

In the differential diagnosis of traumatic gastritis the following conditions must be considered: Primary indigestion, peritonitis from other causes, necrobacillosis of the liver, arthritis, chronic enteritis, and pyelonephritis.

Surgical interference by rumenotomy stands as the best treatment of traumatic gastritis. The operation is simple and can be completed in about an hour by the average practitioner. A very high percentage of recoveries can be obtained if the veterinarian chooses his cases carefully.

The following conditions are contraindications to rumenotomy: A weakened, debilitated patient which has been sick for a week or more; a patient showing any symptoms of cardiac involvement; or a temperature over 104 degrees. If the temperature can be controlled by antibiotic and sulfonamides the operation may be attempted, but with guarded prognosis.

The patient should be allowed all the water it will drink prior to the operation but it should not be fed after the decision to operate is made. The operation is done standing. The left paralumbar fossa is clipped and an area 3 or 4 in. back from the incision line is shaved. The whole area is scrubbed with a brush and antiseptic soap and warm water, dried, and a strong skin antiseptic applied. Anesthesia is accomplished by local infiltration with procaine hydrochloride 2 percent using an 18 ga. 1 or 1½ in. needle.

The incision is made equidistant from the last rib and the tuber coxae starting just below the transverse processes of the lumbar vertebrae and extending ventrally 6 or 7 in. After making the skin incision, a clean scalpel is used in separating the deeper tissues to prevent their contamination with skin bacteria. The rumen incision may be made with the assistance of four stay sutures placed in the wall.

Two men are required to hold these sutures properly. If manpower is short, the rumen incision can be made with the assistance of one man with a strong grip who draws the rumen wall out through the abdominal incision, holding it firmly at each end of the commissure. The operator then incises the rumen just enough to receive a five to six inch hoop fastened in the center of a sterile rubber shroud. The hoop is inserted edgewise, then turned 90 degrees to make a tight fit and the rumen is then allowed to slip back into the abdomen. The rumen contents can be re-
moved through the hole in the shroud without contaminating the abdominal cavity or incision edges.

If the patient has been well watered prior to the operation the bottom third to half of the rumen and reticulum will be filled with liquid. Only enough of the solid contents in the upper part of the rumen need then be removed to give access to the watery contents. The arm can then easily be passed up through the watery contents to the reticulum which is recognizable by its "honeycomb" mucosa.

The walls of this organ are inspected for offending metal which is carefully removed without making any attempt to disturb the surrounding adhesions. All other foreign bodies should also be removed from the reticulum.

The operator's findings in the reticulum will help him establish a prognosis in each particular case. For instance, if the metal is found to have merely torn the mucosa a favorable prognosis might be indicated. In a deep penetration towards the heart where the metal is found to move with the heart beat and where extensive abscesses and adhesions have developed the operator would be justified in making a poor prognosis.

After carefully removing the shroud and cleaning the incision edges, the rumen is closed with two rows of infolding sutures using # 1 hard chromic gut. If stay sutures were used to hold the rumen wall, the resultant puncture wounds should be covered by the outer row of sutures.

Instead of the conventional closure of the abdominal incision the figure "8" suture advocated by Dr. G. W. Moore of Michigan State College may be used. The two most apparent advantages to its use are the speed with which the abdomen can be closed and the absence of tissue reaction to the large quantities of gut ordinarily used to close an abdominal incision. Quarter inch umbilical tape is used for this suture. It passed down through the skin on the right side of the incision, passes over and then down through the muscle and peritoneum on the left, over and up through the peritoneum and muscle on the right, then over and up through the skin on the left side of the incision. The lower loop of the "8" is first tightened just enough to draw muscle and peritoneum into snug contact. Then the upper loop is tightened to bring the cut edges of the skin together without causing infolding. The sutures should be about an inch apart. It is best to place them all loosely in the tissues before any are tightened and tied. The lips of the incision are dusted with sulfanilamide—urea powder prior to closure. Good healing has occurred in all of the 40 cases in which this method of closure has been used by the senior author of this article. The sutures are removed in ten days.

A prophylactic dose of 3 million units of procaine penicillin in oil is administered at the time of the operation. The patient should be examined in 48 hours. Usually the appetite is returning by that time, if not, stomachics and rumen transplants are indicated. The quantity of roughage should be restricted for a few days post-operatively.

Of the 40 cases operated by the senior author, one died and one was sent to slaughter because of effects attributable to the penetration of the foreign body. All other cases were well on the way to recovery within a week.
The operation on the animal that died was performed at the insistence of the owner, for whom a successful operation had been performed previously. At the time of the operation the patient, an aged Holstein cow, was in severe pain and heart sounds were absent on the left side but clearly audible on the right. The temperature was in the high normal range. The patient died six weeks after the operation and postmortem revealed pericarditis with about 5 gallons of purulent fluid present in the pericardial sac.

The patient sent to slaughter showed no apparent heart involvement prior to the operation, but when the offending piece of metal was removed it was observed to be directed towards the heart. The animal improved for about a week then started a slow relapse. It aborted a five months fetus two weeks after surgery. Three weeks postoperatively the patient was emaciated and anemic, edema was present at the throat and brisket, and no heart sounds could be auscultated on either side of the chest. A diagnosis of pericarditis was made and the animal sent to slaughter for salvage.

In summary, traumatic gastritis commonly occurs in the bovine because of the eating habits and gastric anatomy of this species. The condition is especially common in dairy cows because of their numbers and the age to which they are kept. Traumatic gastritis can be rather easily recognized by considering the history and clinical symptoms presented. An electronic metal detector may be used as an adjunct to diagnosis. The best treatment of the condition is early removal of the foreign body by rumenotomy. The operation should not be attempted on patients which are debilitated by prolonged illness or which show symptoms of heart involvement. By carefully choosing cases and operating early, a very high percent of recoveries can be obtained.

The herd bull is the greatest single influence in a cattle herd.

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