Traumatic reticulitis, reticulo-peritonitis and pericarditis (Foreign body syndrome) in bovines

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Abstract

Foreign body syndrome in bovine species has been increasing in incidence. This can result in three conditions. Traumatic reticulitis could be successfully treated by performing rumenotomy in four animals. Potential foreign bodies crossed the reticular wall and pierced the internal structures like liver, spleen, peritoneum etc, and resulted in traumatic reticulo-peritonitis in four animals. Two animals affected with traumatic reticulo-peritonitis and traumatic pericarditis died. The symptoms, diagnosis, treatment and prognosis were discussed.

Key words: Traumatic reticulitis; Traumatic reticulo-peritonitis; Traumatic pericarditis; Rumenotomy; bovine

Introduction

Foreign body syndrome in cattle is one of the common disorders in large ruminants reared in industrial areas. This includes three different conditions of surgical interest including traumatic reticulitis, traumatic reticulo-peritonitis and traumatic pericarditis. The common etiology for these three conditions is ingestion of metallic foreign bodies through the feed material. During earlier days, this condition was diagnosed only on postmortem in cattle and buffaloes and was receiving less attention when compared to the infectious and contagious diseases (Aghion, 1953). Nowadays, due to urbanization and lack of adequate floor space, many of the animals are let outside for grazing, which make them eat the waste materials even. Besides this, depraved appetite due to mineral deficiencies also makes them consume non-sensical stuffs containing metallic objects leading to foreign body syndrome.

With the advent of modern diagnostic equipment and increased cost of farm animals, many cases are now presented for the expert treatment, although after worsening of the disorder. Yet, there is only limited scope to succeed in treating the cases of traumatic reticulo-peritonitis and pericarditis. In this paper, six animals including four buffaloes and two crossbred cows with foreign body syndrome were presented.

History and clinical examination

Two cows and four she buffaloes were brought to the Department of Surgery and Radiology with signs of respiratory distress, anorexia, weight loss, sunken eye balls etc. The prominent clinical signs identified were recurrent bloat, brisket oedema (Fig 1), increased pulse rate, cording of jugular vein (Fig 2), negative jugular pulsation etc. The forelimbs appeared abducted (Fig 3). The temperature was in the range of 99 to 103^0 F, Pulse rate was in the order of 98 to 112. Respiratory rate was between 38 and 46 per minute. It was reported that the animals were reluctant to lie down and remained in standing position for most of the time. At the time of getting down, there were signs of discomfort exhibited by grunting sounds.

Two buffaloes had sub mandibular edema, dyspnoea and stertorous breathing. In one buffalo, ventral edema was very prominent extending from the brisket region to the udder (Fig 4). This animal was treated with diuretics and chalk paste comprising creta preparata and glacial acetic acid, without any response. In all the animals, recurrent bloat was observed, which was said to have been treated with antizymotic drugs with only transient relief. All the animals were pleuriparous and out of six animals, three were pregnant. There was significant hypogalactia in the calved animals. Mild to moderate dehydration was evident. Skin tenting time increased by more than 8 to 10 seconds.

Temperature was slightly elevated (102.8 to 103.6^0F). Rumen motility was sluggish, ranging from 0-1 per two minutes. Auscultation of heart revealed muffled sounds. In traumatic pericarditis, heart sounds were more muffled. Poll test was positive in four out of six cases. The animals had severe discomfort at the time of walking up the ramp. Diagnosis was made mostly from the clinical signs and supported by blood picture. The complete blood picture disclosed leucocytosis shift to left. The Packed cell volume levels were found elevated in all the animals. The diagnosis was made based on clinical signs and blood picture. Radiography and ultrasonography were inconclusive in all the cases. Radiographs were obtained with 500 mA X-ray machine (Siemens) using traditional wet processing technique. As the animals had severe bloat and hence only standing lateral thoracic radiographs were obtained which yielded no contrast. However, Braun *et. al* (1993) claimed that, the sensitivity of the radiographic diagnosis was 76 percent.

Treatment and discussion

All the animals were treated conservatively at local veterinary hospitals before they were brought to the Teaching Veterinary Hospital. As they had affinity towards concentrates, and being early calvers, they were treated for ketosis. Broad spectrum antibiotics, intravenous salines, anti-inflammatory drugs, diuretics etc. were also tried without any success. By the time they were presented, all had considerable dehydration. Exploratory surgery was immediately planned and executed.

Rumenotomy was performed under aseptic conditions in all animals, in standing position. They were sedated with Triflupromazine hydrochloride @ 0.1 mg/Kg body weight. Local analgesia was achieved by inverted L-block using 2 per cent Lignocaine hydrochloride solution. A vertical incision was made in the left paralumbar fossa, 6-8 cm ventral to the transverse processes of lumbar vertebrae. Left flank laparo-rumenotomy was performed employing Weingart's frame. The rumen was exteriorized and its wall was incised. The contents of rumen and reticulum were thoroughly searched and coins, nails, needles, plastic and rubber materials were retrieved (Fig 5). In one animal, the adhesions between the reticulum and diaphragmatic wall were identified. Attempts to separate the adhesions were not successful. After the retrieval of foreign bodies, the rumen contents were removed up to one

third of the existing quantity. In three cases, fresh rumen cud obtained from the sheep at the slaughter houses was placed in the rumen. Probiotic drugs containing yeast extract and sugar were also placed in the rumen.

Fig 1. Brisket oedema in a buffalo

Fig 2: Cording of jugular vein in a buffalo

Fig 3: Abduction of forelimbs with open mouth breathing in a buffalo.

Fig 4: Ventral oedema extending from sternum to pubis.

Fig 5: Foreign bodies retrieved from the reticulum.

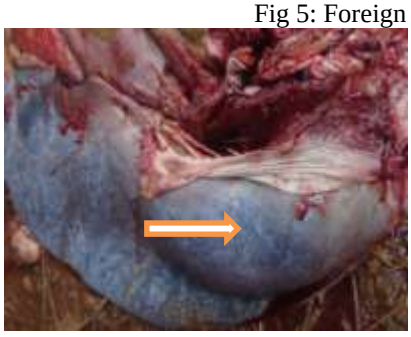

Fig 6: Abscess foci on spleen.

Fig 7: Adhesions between the reticulum and diaphragm.

Fig 8: The potential foreign body in the reticulum.

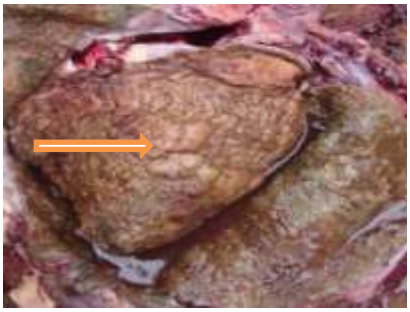

Fig 9: Severe fibrinous pericarditis.

Intra venous crystalloids like DNS and electrolyte solutions were infused for 5 to 7 days in order to combat the dehydration. Broad spectrum antibiotics like strepto penicillins were administered @ 10 mg/ Kg body weight for a period of one week. Meloxicam @ 0.2 mg/Kg SC was given once daily for three days. Out of six animals, four could recover fully and resumed normal productive and reproductive life later on. The treatment adopted was in accordance with those of other researchers like Abdelal *et. al* (2009) and Ghanem (2010).

In the remaining two animals, one died two days after surgery while the other died after 9 days. Postmortem examination was carried out in the dead animals. The animal that died after two days showed signs of reticulo peritonitis like flakes of pus in the peritoneal fluid. The texture of the spleen was completely changed, with several foci of abscessation (Fig 6). There were adhesions of reticular wall with diaphragm (Fig 7). Hence it was diagnosed as traumatic reticulo-peritonitis. The animal that died after nine days had a long penetrating nail in the reticulum (Fig 8) that was penetrating in to the pericardial sac. The heart had severe fibrinous pericarditis with thick fibrinous nodules (Fig 9). The contour of the heart altered from its normal structure. However, the interior of the heart was normal and free from any pathological lesions. This animal was diagnosed to have died of traumatic pericarditis.

Affections of the ruminant fore-stomach due to ingested foreign bodies are the subject of attention almost all over the world and of major economic importance due to severe loss of production. In the present report, the foreign bodies were thought to have a sojourn through the reticulum, which might have been ingested by these animals at the time of grazing. Cattle commonly ingest foreign objects because they do not discriminate against metal materials in feed and do not completely masticate feed before swallowing (Braun *et. al*, 2002). However, Sojka (1990) reported a case of traumatic pericarditis due to penetration of the foreign body in through the skin, sternebrae and pericardial sac without any involvement of reticulum in a two year old cow. All the animals were either pregnant or recent calvers which indicate that, this is related to high producing animals that are heavily fed.

The symptoms of foreign body syndrome have been well established and are of high diagnostic value. In traumatic reticulitis, ruminal impaction, recurrent bloat, suspended rumination etc were evident; in reticulo-peritonitis, arched back, stiffness of forelimbs, abduction of forelimbs, dyspnoea, brisket edema, constipation etc were noticed. The abduction of forelimbs occurs to minimize diaphragmatic movements and to increase the mechanical advantage of accessory muscles (Singh *et. al*, 1993). Frequent attacks of tympany, jugular pulsation and edema of dew lap quoted as prominent signs of traumatic pericarditis (Aghion, 1953) were noticed in the present case. Formation of adhesions between epicardium and pericardium and fluid accumulation in the pericardial sac impairs the ability of the heart to act as a pump leading to cardiac tamponade, resulting in right sided heart failure. The same is responsible for the muffled heart sounds on auscultation.

As the early symptoms of this disorder are also present in several medical disorders like bovine ketosis, abomasal displacement, vagal indigestion, diaphragmatic hernia etc, differential diagnosis must be meticulously made. Abdelal *et.al* (2009) recorded brisket edema and distended jugular veins in both cattle and buffaloes. They observed that, the classical symptoms of pain and systemic reaction were common in cattle, but less common in buffaloes. The cows affected with Traumatic pericarditis had more significant clinical signs like, arched back, sharp decrease in milk yield, reluctance to move with abducted forelimbs as observed by Ghanem (2010). Diagnosis of this condition can be established with a fair amount of accuracy by diagnostic ultrasound and radiography wherever facilities are available. But in the present study, tentative diagnosis was made based on clinical signs that were supplemented by blood picture.

Septic pericarditis was thought to be an infrequent sequel to traumatic reticulitis in cattle Hoffsis (1980). But it appears that, the frequency of such cases has been increased these days perhaps due to urbanization. Due to involvement of heart and advanced nature of the condition, the animal could not survive. However, Hoffsis (1980)

and Mason (1979) reported successful treatment of traumatic pericarditis following pericardial drainage and 6th rib resection in cows.

The conservative or prophylactic treatment by placing magnets in the reticulum has not been adopted in India. In case of traumatic reticulitis, without the entry of the foreign body, rumenotomy alone is sufficient to manage the condition. Prognosis in such cases appears fair to good. Fluid therapy was continued in all the cases till when the PCV values restored to normal levels.

Hence, it can be concluded that, in case of suspicion of foreign body syndrome in bovines, exploratory laparo-rumenotomy must be performed as early as possible, to prevent the possible movement of the foreign body in to the thoracic or abdominal cavities.

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