

The use of radiography and ultrasonography in diagnosis of idiopathic vagal indigestion in a cross bred cow

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Abstract

The paper describes diagnosis of idiopathic vagal indigestion in a cross bred cow. Clinical examination revealed bilateral abdominal distension, dehydration, tachycardia, tachypnea, normal reticular sounds at 5th ICS and occasional spontaneous grunt. The per-rectal examination findings were non-specific but could rule out rumen impaction, intestinal obstruction and caecal dilatation. Clinical examination, abdominocentesis, radiography and ultrasonography could help in ruling out the main causes of vagal indigestion like traumatic reticuloperitonitis, diaphragmatic hernia, reticular abscess, abomasal displacement, peritonitis and paralytic ileus. On the basis of progressive abdominal distension, L shaped rumen on rectal examination and hypermotile reticulum, the case was diagnosed as vagal indigestion. Orogastric intubation was done to relieve the gaseous distension of rumen-reticulum. The treatment with intravenous normal saline, enrofloxacin, potassium chloride and antibloat agent, liver tonic, and single dose of calcium therapy resulted in uneventful recovery of the cow within four days.

Key words: Cow, Idiopathic vagal indigestion, Diagnosis

Vagal indigestion comprises of a group of gastrointestinal disorders of cattle and buffaloes resulting from mechanical or functional obstruction of the fore stomach and/or abomasum outflow. Vagal indigestion is also known as Hoflund's syndrome because Hoflund (1940) was able to stimulate clinical signs of the disease in experimental animals after selective vagotomy. The vagal indigestion pathogenesis in cattle is not well defined, and the causes of vagal indigestion can be broad and varied. The most common etiology is assumed to be complication of traumatic reticuloperitonitis (Radostits *et al.*, 2007). The other causes cause of vagal indigestion has been described in a recent review (Hussain *et al.*, 2017). This case report describes the clinical signs, and diagnosis of idiopathic vagal indigestion in a cross bred cow by use of radiography and ultrasonography.

Case History and Clinical Observations

Six year old Holstein Friesian cross bred cow was admitted to Teaching Veterinary Hospital of Faculty of Veterinary Science and Animal Husbandry, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, with history of tympany and progressive abdominal distension from last 10 days. There

was partial anorexia and gradual reduction in milk yield. The animal was passing scanty mucous coated faeces. There was history of change in fodder from green grass to willow leaves (3 days before illness). The animal showed signs of abdominal pain with severe abdominal distension. The cow had been treated but without any favourable outcome.

On clinical examination there was bilateral abdominal distension (Fig. 1) and occasional spontaneous grunt. The muzzle was dry, temperature was normal (100.6°F), and heart and respiration rates were increased (120/min and 46/min, respectively). The rumen was gas filled but motility was present. William's method of auscultation revealed normal reticular sounds at costochondral junction of 5th intercostal space (ICS) on left side of abdomen. The wither pinch test was negative, on three successive occasions. Succussion of right ventral abdominal quadrant did not reveal any abnormal sounds. The per-rectal examination revealed sticky rectal mucosa, negligible faeces in rectum and L shaped rumen. There was no evidence of intestinal obstruction or abomasal displacement. Abdominocentesis at three sites did not reveal any peritoneal fluid. Orogastric intubation was done to relieve the gaseous distension of rumen-reticulum.

Radiography and Ultrasonography: Plain radiograph of the reticulum was taken with the cow in lateral standing

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Fig. 1: Bilateral abdominal distension in the cow suffering from vagal indigestion

position. The radiographs revealed a clear diaphragmatic line and no metallic foreign bodies (Fig. 2A). For ultrasonographic examination of the reticular region, the right lateral wall of the thorax (4th to 7th intercostal space) was shaved and smeared with transmission gel for optimal transmission of ultrasonic waves. The reticulum was identified within the abdominal cavity, in real time B-mode, as a smooth crescent-shaped structure (Fig. 2B) with characteristic biphasic contractions when scanned at the 6th and 7th intercostal spaces at the level of elbow. The ultrasonography revealed hypermotile reticulum and no other abnormality.

Treatment: The animal was treated with intravenous normal saline (10L twice a day), enrofloxacin (7.5mg/Kg BW) once a day, one-dose of calcium therapy (450mL of MIFEX, Novartis India Limited, India), potassium chloride (100g orally twice a day) with 5 L of luke warm water, and liver tonic (10ml of injection Livadex, Virbac Animal Health, India). The owner was advised to give 300 g of magnesium sulphate orally on second and third day, and antibloat agent (200ml of Bloatosil, Vetoquinol, India) orally whenever tympany is severe. The owner was informed that if the animal did not respond to the medicinal treatment within 3 days, then exploratory rumenotomy may be inevitable. As per the daily telephonic conversation with the owner, the animal passed scanty faeces on second day and loose feces on third day. The distension decreased from second day onwards and resolved completely after three days. The appetite improved from third day and was

normal on 4th day. The animal passed normal formed faeces from 4th day onward.

Discussion

Vagal indigestion in cattle is a chronic abdominal disorder and the causes are varied, sometimes even not related to gastrointestinal tract and many times even not identifiable (Hussain *et al.*, 2017). In the present case, the diagnosis was based on progressive abdominal distension which did not respond to antibloat agents, L shaped rumen on rectal examination and hypermotile reticulum on ultrasonography. The exact cause of the case could not be established even after radiography and ultrasonography but we could rule out the main causes of vagal indigestion like traumatic reticuloperitonitis, diaphragmatic hernia, reticular abscess, peritonitis abomasa displacement and paralytic ileus. As per literature, an important aspect of the clinical history of vagal indigestion cases is that standard treatments for ruminal tympany usually have no effect on the course of the disease (Radostitis *et al.*, 2007) and same was observed in the present case. There was a history of change in fodder but to our knowledge that would have lead to simple indigestion and the signs of vagal indigestion.

The most important clinical sign is progressive abdominal distension even though the animal is anorectic (Hussain *et al.*, 2017). Although papple shaped abdomen is considered to be a characteristic of vagal indigestion (Hussain *et al.*, 2014a; Radostits *et al.*, 2007), in buffaloes it may be observed only in few cases (Hussain *et al.*,

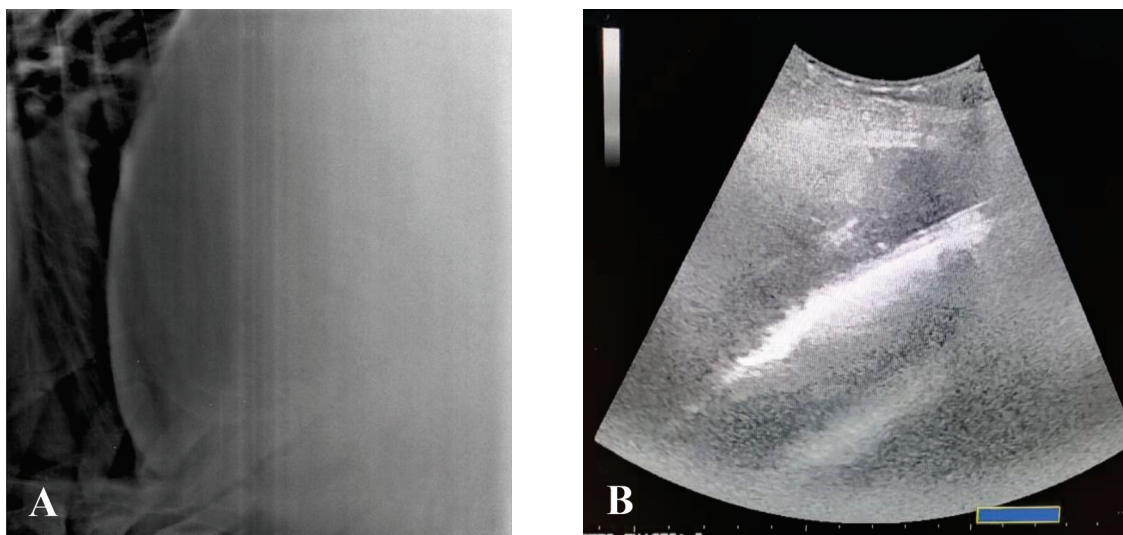


Fig. 2: Lateral radiograph showing clear diaphragmatic live (A), ultrasonogram showing reticular wall at the 6th intercostal space (B),

2014b). In present case, the distension was bilateral but on rectal examination the rumen was L- shaped, which was in agreement to previously reported rectal examination findings (Hussain *et al.*, 2014a; Radostits *et al.*, 2007).

The clinical signs were similar to that reported by Hussain *et al.* (2014a) except that in present case rumen was hypermotile and abdominal distension was bilateral. The auscultation of reticular sounds at 5th ICS rather than 6th or 7th ICS may be attributed to distension of rumeno-reticulum with gas. The treatment protocol was almost similar to that adopted by Hussain *et al.* (2014b) for management of bovine vagal indigestion. Liver tonic was administered on daily basis because the liver function has been reported to become altered in vagal indigestion due to chronic anorexia (Hussain *et al.*, 2014a, b). Inhibition of gastrointestinal motility due to any reason can lead to abomasal reflux and the then hypochloremic hypokalemic metabolic alkalosis (Kuiper and Breukink, 1986; Radostits *et al.*, 2007). It is important to mention that magnesium sulphate was administered after rehydrating the animal and the second dose of magnesium sulphate was not administered as the animal passed loose feces after the first dose. It is concluded that the prognosis of vagal indigestion in cattle is good if dehydration and electrolyte imbalances are corrected on time.

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