

Physical and ultrasonographic diagnosis of intussusception in a crossbred jersey cow- a case report

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ABSTRACT

A six-year-old Crossbred Jersey cow was presented with the complaint of progressive inappetence to complete anorexia, reduction of faeces quantity followed by complete absence of faeces for a period of one week. No improvement was observed to prior medication with parenteral fluids and oral laxatives. The presence of firm mass and malodorous scanty blackish pasty dung, with evincement of pain cranial to the pelvic cavity on right dorsal flank was observed per-rectum. Transabdominal ultrasonography of the firm mass which was positioned per-rectally towards dorsal flank revealed a “bull’s eye appearance”. The intussuscepted intestine measured 4.42 cms in diameter while the inner intussusceptum measured 1.47cm in diameter.. Right flank exploratory laparotomy revealed a jejuno-ileal intussusception and end to end anastomoses was performed following jejuno-ileal resection. The animal had uneventful recovery without any complication and the appetite was restored to normalcy. In conclusion transabdominal ultrasound along with per rectal examination could be a valuable diagnostic tool in cows with intestinal obstruction.

Key Words: Cow, Intussusception, transabdominal ultrasound, Bull’s eye

Centre case history and Observation

A six-year-old crossbred Jersey cow weighing about 320 kg in early lactation and calved twice was presented to Large Animal Referral Clinic, Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu with the complaint

of progressive inappetence to complete anorexia, reduction of fecal quantity followed by complete absence of faeces for a period of one week.

No improvement was observed to prior medication with parenteral fluids and oral laxatives for 3 days. Aseptic procedure (Wilson *et al.*, 1985) using 20G 1.5-inch needle to collect clear transudate for analysis was done. Whole blood was collected for hemato-biochemical analysis and Plasma fibrinogen (Fb) was assessed by

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heat precipitation method as described by Schalm (1980).

Clinical examination revealed congested conjunctival mucous membrane, sunken eyeball, dryness of muzzle and severe dehydration with scanty dung defecation. The vital parameters like temperature was 38.2°C, heart rate was 86 bpm (tachycardia) and respiratory rate was 20 bpm. Further, marked reduction of ruminal motility (1/min) with occasional belly kicking were observed in the affect animal. The presence of firm mass and malodorous scanty blackish **pasty** dung (Fig.1), with pain evincement of cranial to the pelvic cavity towards the right dorsal flank was observed on per-rectal examination. Abdominocentesis was performed as per the standard in the animal.

Centre Ultrasonographic Examination

With the cow in standing position as described by Braun (2009) and Venkatesan *et al.*, (2018) Transabdominal ultrasonography was performed and on the right dorsal flank, mid and lower ventral abdomen using Esaote My lab One Color doppler Ultrasound with 2.5 to 5 MHz curvilinear array probe.

The firm mass was positioned by per-rectal manipulation towards the dorsal flank with simultaneous placement of the transducer on the mass. The sonogram revealed a “bull’s eye appearance” or onion

ring like appearance of the intussuscepted portion (4.42 cms in diameter as a whole part while the inner intussusceptum was 1.47 cms in diameter) (Fig.2a). Dilated intestinal loops were observed at right mid and lower ventral abdomen with the loops measuring greater than 3.61 cm diameter upon examination in different planes and in one plane circular movement of intestinal contents with reduced intestinal motility was noticed with the presence of anechoic fluid between the loops (Fig. 2b).

Centre Surgical Intervention

On the basis of history, clinical, physical, ultrasound and biochemical examinations a tentative diagnosis for intussusception was made and the cow referred to surgery ward.

The tentative diagnosis was confirmed by right flank exploratory laparotomy as per the standard procedure by Oehme (1988). The cow was operated in standing position without sedation by using right paravertebral anaesthesia with 2% lignocaine. Exploration of the abdominal cavity revealed the presence of mild peritonitis with clear transudate in the peritoneum. The (jejuno-ileal) intussuscepted mass with distended loops were exteriorized from the abdominal cavity (Fig. 3). However, the intussusception could not be corrected manually and hence end to end anastomoses was performed after jejuno-ileal resection.



Fig.1.Rectal examination shows a black tarry feces

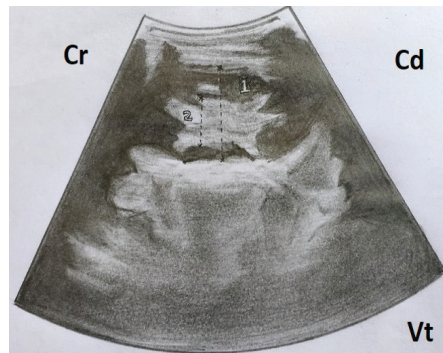
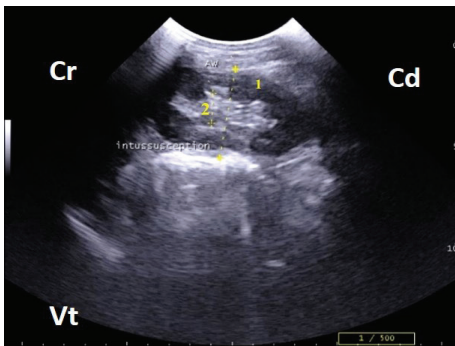


Fig.2a. Trans-abdominal ultrasonography and schematic representation of intussusception showing “bull’s eye appearance” of intussuscepted portion of intestine {Intussusception - 4.42 cm diameter (1) and Intussusceptum - 1.47cm in diameter (2)}; Cr-Cranial, Cd-Caudal, Vt-Ventral

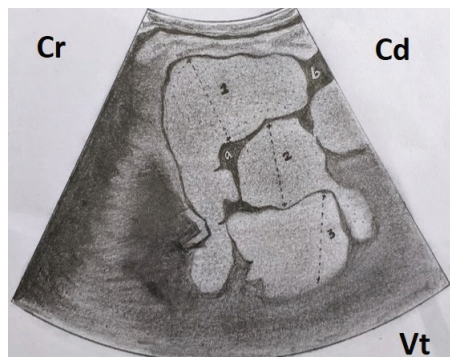
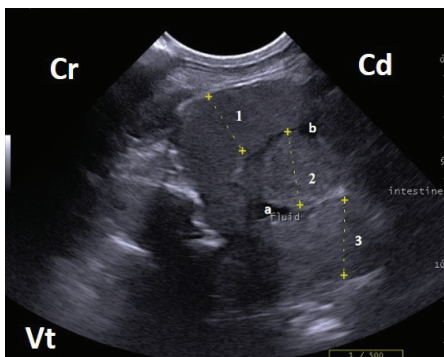


Fig.2b. Trans-abdominal ultrasonography and schematic representation of multiple dilated intestinal loops (1,2,3) (> 3.5 cm in diameter) along with mild peritonitis (a, b) at right paramedian region. Cr-Cranial, Cd-Caudal, Vt-Ventral

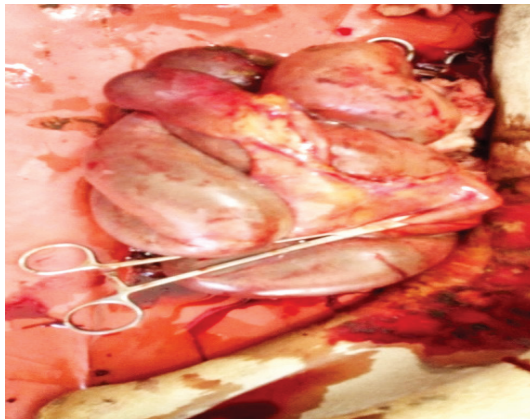


Fig.3. Jejunum-ileal intussuscepted portion (purple-red colour) of intestine with distension of other loops.

Centre Treatment and Discussion

Complete blood count was normal and biochemistry revealed elevated glucose, Alkaline phosphatase (ALP), hypocalcemia, hyperphosphataemia and increased protein levels in the peritoneal fluid (Table.1). A plasma protein: fibrinogen ratio of 5.75 indicated hyperfibrinogenemia which resulted due to acute inflammation of the intestine. This finding was in accordance with the previous study (Ramprabu *et al.*, 2003) where the plasma protein: fibrinogen ratio was 4.89 ± 0.32 (localized traumatic peritonitis) and 4.68 ± 0.23 (diffuse traumatic peritonitis) which indicated hyperfibrinogenemia was due to inflammation, necrosis and adhesions. Hirvonen and Pyorala (1998) reported that cows with plasma protein: Fb ratio of 10:1 or less was due to dehydration caused by traumatic reticuloperitonitis. The present case had normal plasma protein with elevated fibrinogen, while the plasma protein: Fb ratio was 5.75 which clearly indicated dehydration as a

result of inflammation caused by intestinal obstruction. Oehme and Noordsy (1970) opined that total protein value greater than 3 g/dl in the peritoneal fluid was considered as positive diagnosis for peritonitis with 86 % accuracy. In the present study the total protein value of peritoneal fluid of 11.8 g/dl indicated peritonitis.

Tharwat (2011) demonstrated that ultrasonography in cattle and buffaloes suspected for intestinal obstruction had practical utility to confirm or tentatively diagnose intestinal obstruction, and to plan for surgical intervention. The ultrasound findings of the intestinal obstruction in the present case were in accordance with the observations of the previous study (Braun, 2009) who observed that cattle ileus due to intussusception appeared as bowel within bowel or bull's eye lesion or target pattern or multiple layers or onion ring-type with varying echogenicity.

In the present study multiple dilated (average of >3.61 cm in diameter) intestinal

loops were observed in a single window on the right mid abdominal plane which was in agreement with the findings of Mann *et.al.* (2019) who also reported that presence of multiple dilated intestinal loops in a single scanning area and opined that it was a prominent ultrasound finding in intestinal intussusception.

Post-surgically the cow was administered with Inj. Streptopenicillin 5g IM (3 days), Inj. 5 % Dextrose fluid (5 Liters BID), Inj. Flunixin meglumine 1 mg per kg IM, Inj. Chlorpheniramine maleate 0.5 mg per kg IM, Inj. Vit.B₁, B₂, B₃ 10ml IM for 5 days. The animal had uneventful recovery without any complications and restoration of normal appetite.

Table-1. Haematology and Serum biochemistry of cow with intussusception

Parameter	Intussusception cow	Reference value (Radostitset <i>al</i> 2010)
Hb (g/dl)	10.4	8-15
PCV (%)	47	24-46
RBC (mil/cmm)	5.4	5-10
WBC (/cmm)	6389	4000-12000
Neutrophils (%)	42	15-45
Lymphocytes (%)	55	45-75
Monocytes (%)	2	2-7
Eosinophils (%)	1	2-20
Basophils (%)	0	0-2
Total protein (g/dl) in serum	6.3	6-8
Total protein (g/dl) in plasma	6.9	6.5 -7.5*
Albumin (g /dl)	2.60	2.8-3.9
Globulin (g/dl)	3.70	3.0-3.5*
Albumin: globulin ratio	0.70	0.84-0.94*
Aspartate amino transferase (U/L)	72	45-110
Alkaline phosphatase (U/L)	767	0-500
Alanine transaminase (U/L)	56	30
Blood Urea Nitrogen mg /dl	22	7.8-24.6
Creatinine (mg /dl)	1.81	0.6-1.8
Calcium (mg/dl)	6.8	9-12
Phosphorus (mg/dl)	9.44	5.5-6.5
Fibrinogen (g /dl)	12	3.0-7.0
Plasma Protein:Fibrinogen	5.75	10 - 37*
Total protein in peritoneal effusion (g/dl)	11.8	3.06**
* Reference values from literature of (Hirvonen and Pyorala, 1998; ** Wilson <i>et al.</i> , 1985)		

Transabdominal ultrasonography along with per rectal manual positioning of the palpable mass in the abdominal cavity could be a valuable diagnostic tool in cows with intestinal obstruction.

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