

CLINICAL AND HAEMATOLOGICAL EVALUATION OF RUMINAL IMPACTION DUE TO PLASTICS IN KANKREJ CATTLE

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Received: 15.07.2021; Accepted: 21.08.2021

SUMMARY

Constipation in the cattle is one of the major forestomach problems in cattle due to plastic foreign body. Eleven Kankrej cattle were chosen for this study and subjected to preliminary clinical examination. The key issue was progressive weight loss, impacted rumen, and a lack of rumination. Complete blood count revealed increase in neutrophils ($29.11 \pm 2.42\%$), decreased hemoglobin ($7.28 \pm 0.30\text{g/dl}$) and hematocrit value ($22.45 \pm 0.98\%$). The value of fibrinogen did not alter in any of the animals. Rumenotomy was performed and different types of plastic foreign body were recovered from the rumen of Kankrej cattle.

Keywords: Cattle, Fibrinogen, Hematology, Plastic Foreign Body

How to cite: Gosai, R.K., Chauhan, P.M. and Prajapati, A.S. (2022). Clinical and haematological evaluation of ruminal impaction due to plastics in Kankrej cattle. *Haryana Vet.* 61(SI): 154-156.

Plastic foreign body in the animals is one of the man-made conditions due to indiscriminate use of plastic, improper waste disposal and nutrition deficiency (Singh and Nigam, 1981). Animals prefer unconventional food materials due to inadequate daily minimum feed requirement. It interferes with the normal physiological process of the animal which leads to altered health status. The majority of the foreign body is in the forestomach and is the cause of the pathological condition (Tehrani *et al.*, 2012). Depending on the nature of the ingested foreign bodies and the diagnostic facilities, the detection of foreign bodies in ruminants' stomachs is routinely accomplished by exploratory surgery and, occasionally, by Ultrasonography (Radostits *et al.*, 2007; Ramin *et al.*, 2008; Semieka, 2010). Studies have shown that the non-penetrating foreign bodies commonly recovered in bovine stomachs are plastic bags, sack thread, ropes, leather, rubber, bed linen, pieces of lead pipe, straw baskets, hair and plant fibres (Anwar *et al.*, 2013). In the present work, eleven stray Kankrej cattle were selected and evaluated for various clinical symptoms and hematological parameters pertaining to rumen impaction due to plastics and were subjected to rumenotomy.

Present work was conducted under field conditions at Panjarapole to confirm the cause of illness in 11 Kankrej cattle. The major complaint in all the animals was indigestion and progressive weight loss. The cattle were previously treated with fluid therapy, antibiotic (Inj. Teravet, Geevet Remedies, Mehsana @ 10 mg/kg body weight), antipyretic (Inj. Melonex®, Intas Pharmaceutical Pvt. Ltd., Ahmedabad @ 0.5 mg/kg body weight) and rumenotonic (Bol. Ecotas, Intas Pharmaceutical Pvt. Ltd.,

Ahmedabad @ 2 bolus daily) besides mineral mixture (Pulv. Agrimin Chelated forte, Virbac Animal Health Pvt. Ltd., @ 50 gm daily), Pow. Magnesium sulphate @ 200 gm and liquid Paraffin 400 ml daily for two consecutive days but there was no response to the treatment. Proper anamnesis was gathered i.e. duration of illness, major problems, temperature, feeding and animal behavior. Selected animals were subjected to evaluation for detail clinical examination. Feroscopic examination was carried out over the chest and abdomen to become aware of the ferromagnetic foreign bodies in the rumen and reticulum. From all animals, 10 ml of blood was collected from the jugular vein and hematological parameters like hemoglobin, total leukocyte count, differential leukocyte count, total erythrocyte count, packed cell volume and plasma fibrinogen were estimated. All selected animals were restrained in lateral recumbency. The anesthesia was carried out under local infiltration. After desensitization of skin, incision was made in left paralumbar fossa near to the last rib. The muscles and peritoneum incised in routine manner. The rumen was fixed with weingarh rumenotomy set and rumen was incised after packing the abdominal cavity to prevent contamination. The plastic foreign body was removed from rumen by mild traction. Rumen was sutured with Lambert followed by Cushing suture pattern using chromic catgut no. 2.0 in all the cases. The peritoneum was sutured by continuous lock stitches pattern using chromic catgut No. 0. Muscles and skin were sutured by routine method.

Fore-stomach disorders are very well reported in ruminant animals. Presence of plastic foreign material is one of the conditions in cattle which causes economic loss to owner as well as deteriorate the health status of animal.

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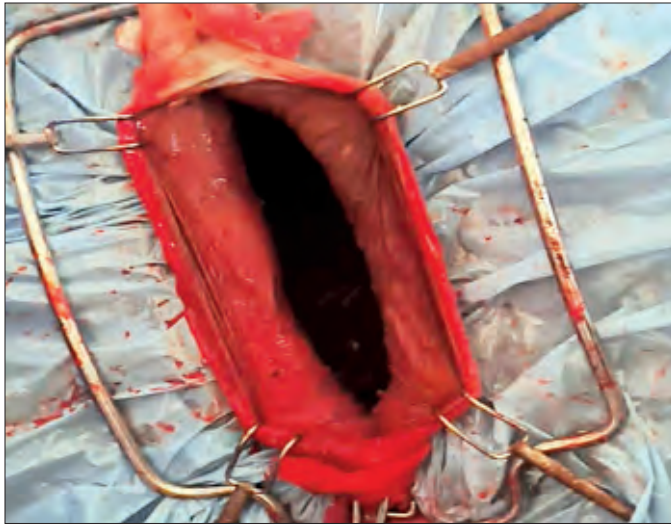


Fig. 1. Erosions on ruminal wall due to plastic foreign body

Table 1

Different types of clinical examination in Kankrej cattle (n=11)

Clinical observation		Animal Number	Percent
Body condition	Normal	1	9.09
	Thin	4	36.36
	Emaciated	6	54.54
Feces	Dry impacted	11	100
Rectal temperature	99.5-102 °F	8	72.73
	>102 °F	3	27.27
Rumen examination	Distended	4	36.36
	Impacted	7	63.63
Abducted elbow	6	54.54	
Gynecological status	Pregnant	1	9.09
	Non-pregnant	10	90.91
Metal detection	Negative	11	100
In appetite	11	100	
Rumination	Present	2	18.18
	Absent	9	81.82
Bloat	4	36.36	
Change in heart sound	8	72.73	
Dyspnea	9	81.82	

Total eleven animals selected for present work were more than ten years of age. Mushonga *et al.* (2015) also reported similar observation in cattle. Patel *et al.* (2012) also reported similar findings from buffalo. Mesele *et al.* (2020) retrieved plastic foreign body from 49/68 slaughtered cattle. All animals were subjected for various clinical examinations shown in Table 1. Six animals (54.54%) had emaciated body condition, while four (36.36%) animals were with thin body condition. This might be due to improper nutrition received by cattle. Constipation was one

Table 2

Hematological parameters in cattle with plastic foreign body compared to the reference value

Parameters	Range (Radostits <i>et al.</i> , 2007)	Cattle with Plastic foreign body
Hemoglobin (g/dl)	8.0-15.0	7.28 ± 0.30
Hematocrit (%)	24-46	22.45 ± 0.98
RBC (10 ⁶ /μl)	5.0-10.0	5.65 ± 0.28
WBC (10 ³ /μl)	4.0-12.0	7.65 ± 0.75
MCV (fL)	40-60	40.13 ± 0.97
MCH (pg)	11.0-17.0	12.99 ± 0.35
MCHC (g/dl)	30.0-36.0	32.35 ± 0.21
RDW (%)	16.7-23.3	16.31 ± 0.37
Thrombocytes (10 ⁹ /μl)	100-800	110.73 ± 4.50
Neutrophil (%)	14-25	29.11 ± 2.42
Lymphocyte (%)	45-75	62.53 ± 2.93
Monocyte (%)	2-7	1.77 ± 0.50
Eosinophils (%)	2-20	7.45 ± 1.77
Fibrinogen (mg/dl)	200-700	215.27 ± 5.07

of the major concerns in all the animals. This might be due to impaction of rumen by plastic foreign material leads to rumino-reticular hypo-motility (Nayak *et al.*, 2014). Abducted elbows also observed in six (54.54%) cases. Abnormal heart sound and dyspnea was noted in eight (72.73%) and nine (81.82%) animals, respectively. Similar study of clinical signs was also carried out by Reddy *et al.* (2004).

The hematological parameters (Table 2) revealed decreased in mean values of hemoglobin and hematocrit below normal range and increase in neutrophil value above the reference range in cattle. This might be due to nutritional deficiency, inflammatory response and erosion of rumen wall (Fig. 1). Fibrinogen is acute phase protein and also a good indicator of inflammation and adhesion (Brar *et al.*, 2000). Plasma fibrinogen estimation revealed that there is no significant change in fibrinogen level (215.27 ± 5.07 mg/dl). Plastic foreign body is non-penetrating in nature so it is not capable for production of measurable inflammatory response. The average weight of plastic foreign body from eleven cows was about 14.50 kg measured by weighing machine.

Present study shows that long term indigestion, progressive weight loss and no response to long term treatment call for exploratory rumenotomy to identify the etiology in cattle. Plastic foreign body is consistent finding in street cattle. Fibrinogen estimation is not a good indicator for plastic foreign body. Proper use of plastic and other waste should be disposed in a proper way.

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