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Management of Rumen Impaction in A 3–year Old Balami Ewe Due To Mainly Polythene Materials: A Case Report

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ABSTRACT

Case report of a 3-year old Balami ewe was presented at the Large Animal Unit of Veterinary Teaching Hospital, Ahmadu Bello University, Zaria with complaints of foamy salivation and progressive weight loss despite good appetite. The pulse rate, respiratory rate and rectal temperature were within normal ranges. Abdominal ballotment revealed a hard mass on the left side of the abdomen and ruminal motility was one cycle in 3/½ minutes. Considering the history and clinical examination, rumen impaction was tentatively diagnosed and confirmed by rumenotomy procedure. Blood sample was taking for haemogram and the patient was prepared for routine rumenotomy procedure. A 4.0 kg weight impacted materials which were mainly polythene materials were evacuated. The patient was hospitalized and the skin sutures were removed. The patient was discharged and the client was advised accordingly.

Keywords: Polythene Materials, Rumen impaction, Balami Ewe

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INTRODUCTION

Ruminal impaction is a condition which results from the accumulation of indigestible non-biodegradable materials in the rumen and interferes with the flow of ingesta leading to distension of the rumen and scanty ruminants faeces [1]. Rumen impaction is of economic importance because it causes progressive weight loss and poor milk yield with or without anorexia. In Nigeria, extensive and semi-intensive livestock management systems are mostly practiced in both rural and urban areas. This makes the livestock prone to refuse-dumping areas where they have access to polythene and other indigestible materials. Deficiency of some minerals led these animals to pick up these materials, probably containing some food materials, in other to make up for deficiencies or satisfy their hunger [1]. Akinrinmade, J. F. and Oluwagbemigun, K. O. reported 10.77% prevalence of rumen impaction in ruminants slaughtered in Ibadan, Southwest Nigeria. Previous studies also showed that the prevalence was higher in females than in males, perhaps due to pica associated with pregnancy [1,2].

History and Signalment

A 3-year old balami ewe was presented at the Large Animal Unit of Veterinary Teaching Hospital, Ahmadu Bello University, Veterinary Teaching Hospital Zaria on 15th April, 2019 with complaints of foamy salivation and progressive weight loss despite good appetite. The patient was a lactating dam. The patient was managed semi-intensively with one other and its lamb, making a flock of four. They were fed on bean husks and wheat bran. There was history of deworming but none of vaccination. On physical examination, the ocular mucous membranes were pale, there was foamy salivation and the patient was emaciated. The capillary refill time was 3 seconds. The pulse rate. 80, respiratory rate, 24 and rectal temperature, 38.3^{O}C were within normal ranges and at this time, the patient weighed 44 kg. Abdominal ballotment revealed a hard mass on the left side of the abdomen and low ruminal motility of one cycle in 3/½ minutes was observed. There was bruxism (teeth grinding).

Samples Sent To Laboratories

Blood and faecal samples were taken and sent to laboratory for diagnoses

Laboratory Results

Haemotology revealed leucocytosis with neutrophilia (13.3), Lymphocytosis (1.9) and Eosinophilia (1.20). Decreased haemoglobin (10.0 g/dl), and PCV (34%) were noticed. Faecal examination revealed no parasite detected while helminthology revealed strongyle eggs.

Diagnosis

Based on the history and clinical findings, the condition was tentatively diagnosed as ruminal impaction. Haemogram revealed normochromic normocytic anaemia and presence of Strongyle eggs in the faeces.

Management

The patient was hospitalized, placed on haematinics for 3 days and dewormed prior to surgery. The patient was allowed to stabilize and surgery was carried out

SURGICAL PROCEDURE

The patient was prepared asceptically for rumenotomy The patient was placed on right lateral position, the hair around the left paralumbar fossa was clipped. The clipped area was scrubbed using chlorhexidine (SaroLifeCare Limited, Nigeria) and methyl alcohol (Abumec Pharmaceuticals Ltd., Nigeria; 90%). Sterile gauze was placed on the proposed surgical site before final preparation of the surgeon. Intravenous fluid line was set for Ringer's Lactate (Unique Pharmaceuticals Ltd., Nigeria) at the rate of 39 drops/min using the jugular vein. Post-operative analgesia was achieved by using diclofenac sodium (YanzhouXierKangtai Pharmaceutical Co., Ltd., China) injection at 3mg/kg intramuscularly. Local anaesthesia was achieved with inverted L-block technique using 2% lignocaine with adrenaline (NitinLifesiencesLtd., India; 1 ml/5kg). Routine laparotomy and rumenotomy procedures were performed as described by Baird, [25] impacted materials were removed

(Fig. 2). Most of which were made up of polythene weighed 4.0 kg. The rumen incision was sutured using chromic catgut (ShenzenRunch Industrial Corp., China), size 0 with non-cutting, curved, atraumatic needle using Cushing oversewn with Lembert suture patterns. The muscle and subcutaneous were sutured with same suture material and needle as the rumen but with simple continuous suture patterns. The skin was opposed using nylon (ShenzenRunch Industrial Corp., China) and cutting, curved, atraumatic needle with ford interlocking (Fig.3)

Fig. 3: Skin closure with ford interlocking suture pattern

Fig. 1: Incision made on less vascularized part of the exteriorized rumen with its base packed with shroud.

Fig. 2: Removal of the Foreign Body

Post- Operative Care

The surgical wound was dressed daily for 3 days. Diclofenac sodium (Yanzhou Xier Kangtai Pharmaceutical Co., Ltd., China) injection at 3mg/kg, penicillin-streptomycin (Hebei Hope Harmony Pharmaceutical Co. Ltd., China) at 800IU/kg – 8mg/kg and multivitamin (Kepro B.V. Holland) 1ml/10kg were administered intramuscularly for 3 days. On visitation, the patient's pen was littered with polythene bags and iron sheets which could harm the animals. Also, the environment where the animals roam was full of polythene materials. The client was advised to always report cases promptly, clear the pen off of polythene materials and iron sheets and supplement the diet of the flock with salt lick as a source of mineral supplement.

DISCUSSION

Pica or allotrophagy is a peculiar condition of depraved or perverted appetite whereby animals or humans start eating objects they normally do not eat [3,4]. The condition is seen in cattle, buffaloes (particularly pregnant and lactating) and occasionally in other animals such as pigs, horses and goats [5]. Pica also occurs in some human patients with iron or zinc deficiencies [5]. Depraved appetite or licking of surface generally indicates a lack of some ingredient in the ration, or it can be a vice or bad habit [5]. It has been suggested that insufficiency of soda salts or phosphates in the food may cause this problem [6] It is characterized by accumulation of plastic,

rexin, polythene bags, ropes and nonpenetrating metal objects like nuts, bolts, etc in the rumen and reticulum of bovine (8).

Trace element deficiencies, in particular copper, zinc and cobalt have been incriminated in the aetiology of alopecia and wood eating habit in sheep [9,10]. It has also been associated with a nervous derangement, probably interfering with nutrition [5]. When phosphorous deficiency is the underlying cause, the affected animals do not only have depraved appetite, but fail to breed regularly and their milk production is markedly decreased [5]. Licking surfaces in animals generally means a lack of salt (sodium chloride), phosphorus, fiber, water or minerals [5]. The clinical signs include pale mucous membrane, complete cessation of rumination, impacted rumen, rumen atony, reduced rumen motility and in appetance [11,12,,13,14,15], as observed in this case. Deepak, *et al*. [8] reported emaciation, passage of scanty faeces by the animal and palpation of left paralumbar fossa to feel a hard impacted mass. Absence of stratification of the rumen was observed in all the affected animals and rectal examination revealed pellet mucous coated dung [8]. The most common gross pathology observed were usually areas of sloughing, haemorrhages, congestion and stunting of the ruminal papillae [8]. Vanitha *et al.* [11] observed that toxic chemicals and pesticides have the potential to disrupt beneficial and necessary biological systems which threaten the biosecurity. Rumen impaction is mainly encountered during the season of feed scarcity when dry feeds like wheat straw and paddy straw form a substantial part of the ration of the animals [15]. It occurs due to feeding of poor quality hay, straw or roughages deficient in protein and readily digestible carbohydrate, overeating of young grasses, ingestion of mouldy or decomposed feed, polythene bags, ropes and other plastic materials, and exposure to hot and dry weather conditions [16,17,18,19,20]. A significant decrease in haemoglobin, packed cell volume (PCV) and total erythrocytic count with leukocytosis and neutrophilia may be due to dietary deficiency [21], sloughing, stunting, erosions, inflammatory response and the hyperplasia due to the pressure on the wall of the rumen caused by presence of foreign bodies [22]. These in turn impair ruminal motility, passage of ingesta into the abomasums into the small intestine and reduced nutrient absorption which lead to poor condition seen. Vanitha, *et al*. [11] reportedly noticed normocytic normochromic anaemia with increased blood urea nitrogen (BUN). Hypoproteinaemia, hypoalbunaemia, hypocalcaemia and hypophosphataemia were reported in some of the clinical cases handled. Hypophosphataemia noticed in the affected animals might be associated with shortage of feeds, especially minerals and vitamins.

Haematological picture revealed reversal of neutrophil to lymphocytic ratio. Neutrophilia might have resulted from chronic irritation of the forestomach wall by impacted feed materials, leaving the wall exposed to secondary infection, which resulted in inflammation [11]. Decreased lymphocyte could be due to release of corticosteroid as a result of stress [23]. Oral fluids containing magnesium sulfate may loosen impaction as a result of indigestible fibre, as reported by Asghar, [24], but a rumenotomy is required in severe cases. Rumenotomy along with transplantation of fresh ruminal cud will produce excellent recovery and found to be best technique of restoration of normal ruminal function at the field level for treatment of chronic ruminal impaction due to plastics in cattle and buffaloes [8]. In this case, ruminal cud was not implanted into the rumen because only the impacted polythenes were evacuated and some slurry of ruminal content was present in the rumen. Deepak, et al [8] reported that problem of non-penetrating foreign body syndrome is increasing at alarming pace in urban areas where the animals are on free grazing. It is recommended that grazing animals should be kept away from urban garbage and dumping places. Cleaning of the environment would substantially reduce the prevalence of foreign body in cattle [8] and ruminants in general. Change of pasture, environment, deworming, purgatives,

followed by alkaline and bitter tonics [5] are preventive measures. Wooldridge [23] mixture or the commercial salt lick or block can be supplemented. Advice to supplement the ration with a balanced mineral-vitamin mixture on regular basis. Regular availability of clean drinking water must be ensured when salt is recommended to the herd or flock of ruminants. Hay along with phosphorus rich food such as wheat and wheat bran, cottonseed meal, peanut meal, etc. should be provided [24].

Recommendation

Rumen impaction has negative impact on animal production, supplementation of minerals and vitamins is therefore necessary. Livestock farmers should be encouraged to practice intensive system or zero grazing management systems to reduce the risk of the animals eating non-biodegradable materials. Strict embargo should be on dumping of refuse or waste in public areas. This act does not only expose the animals to indigestible materials but also a source of environmental pollution and decrease in the volume of useful land for crop production.

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