



Rare Cases of Rumen Impaction in Two Sokoto Gudali Calves

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Abstract | The present report describes two rare cases of rumen impaction involving 2 and 6-month old Sokoto gudali calves. The available literature has shown that older animals are more susceptible to the development of ruminal impaction due to accumulation of non-biodegradable materials than the young animals. Both cases were presented to our Large Animal Clinic with similar complaints of reduced feed intake, absence of regurgitation, recumbency, ventral abnormal swelling and absence of defecation. In case I, the rectal temperature was 37.1°C, the pulse rate was 69 beats per minute, and the respiratory rate was 32 cycles per minute. The calf was weak and recumbent, with enlargement of the ventrolateral abdomen, which was more to the left and hard on palpation. Unfortunately, the calf died before any intervention, and the carcass was submitted for necropsy examination. In case II, a whitish ocular mucous membrane was observed, reduced rumen motility, bilateral ocular discharge, foamy salivation, and labored breathing were observed. The prescapular and submandibular lymph nodes were enlarged, and a hard mass was palpable on the distended abdomen. Rectal examination revealed hard rectal feces in rectum were found. The rectal temperature was subnormal (35.4°C), respiratory rates were 12 cycle/min and the pulse rate was so weak that it was not detectable. Attempts to induce defecation using a KC-bloat failed, and the calf died on examination table. Postmortem examination of the cases revealed that polyethylene bags, plastic materials, and other indigestible materials mixed with ruminal ingesta were found in the rumen. In conclusion, careful examination of rumen impaction should be considered now in calve 6-month below when presented with gastrointestinal abnormalities in developing countries. With accurate radiographic diagnostic investigation, the lives of the affected calves can be save.

Keywords | Rumen impaction, Calves, Sokoto Gudali and Non-biodegradable materials

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INTRODUCTION

Rumen impaction due to metallic or nonmetallic foreign bodies is among the most common causes of gastrointestinal disorders in ruminants (Abebe and Nuru, 2011; Ismail et al., 2007; Bakhiet, 2008). The ingestion of foreign bodies in cattle has been reported to be of great

economic importance, causing severe loss of production and high mortality rates (Radostis et al., 2006; Ravindra et al., 2014). Indigestible material is ingested during periods of food scarcity (Igbokwe et al. 2003). The incidence of non-metallic foreign bodies (mostly polythene) has been explored in previous studies, mostly in cows (Igbokwe et al. 2003; Abebe and Nuru, 2011; Boodur et al., 2010;

Desiye and Mersha, 2012). Clinical rumen impaction with a nonmetallic foreign body is characterized by clear signs of emaciation, dehydration, abdominal distension, and abdominal asymmetry. Affected animals may have scanty feces in the rectum, foamy salivation, recumbency, and inappetence (Ismail et al., 2007; Athar et al., 2010). Although, the diagnosis of foreign body impaction in small ruminants is based on abdominal palpation (Radostitis et al., 2006). However, it is sometimes difficult to distinguish pregnancy from foreign-body impaction in ruminants most especially in large ruminants. Therefore, further investigations are required to establish a definitive diagnosis. Radiography and ultrasonography are currently the reference standard method for diagnosis (Abdelaal, 2014; Akraiem and Abd Al-Galil, 2016), but radiography has one major disadvantage because the fetuses are exposed to radiation hazards, in addition to being difficult to use under field conditions. Ultrasonographic examination, when available, is also important tool for narrowing the differential diagnosis between pregnancy and ruminoreticular foreign materials without the risk of radiation.

Rumenotomy is the only effective and reliable treatment method for plastic foreign bodies, but an early diagnosis is essential for favorable outcomes as reported by Ismail et al. (2007). Rumenotomy along with transplantation of fresh ruminal cud is the best technique for the restoration of ruminal function at the fluid level for ruminal impaction due to plastics in cattle and buffaloes (Boodur et al. 2010). Furthermore, growth stimulants, probiotics, and prebiotics could act as adjuncts to rumenotomy and improve the survival and reversal of rumen ecology (Boodur et al. 2010). This paper describes two rare cases of rumen impaction in calves with nonmetallic foreign bodies.

CASE REPORTS 1

A- 2- month-old Sokoto Gudali calf weighing 30 kg was presented to our large animal clinic with complaints of reduced feed intake, recumbency, abnormal swelling in the ventral part of the abdomen, and absence of defecation (Figure 1). The calf was managed semi-intensively and suckled only with assistance. It was maintained with a dam and three other cows. On physical examination, the rectal temperature was 37.1°C, pulse rate was 69 beats per minute, and respiratory rate was 32 cycles per minute. The calf was weak and recumbent. There was enlargement of the ventrolateral abdomen, which was more to the left and hard on palpation. A bilateral serous nasal discharge was also observed.

Unfortunately, the calf died before any intervention and the whole carcass was sent for necropsy examinations. During necropsy examinations, polyethylene bags, plastic materials, and other indigestible materials mixed with ruminal ingesta were found in the rumen (Figure 2).

Generalized congestion of the small intestine with mucoid content and ballooned cecum with marked congestion on the mucosal surface were also observed (Figure 3). The lungs were severely congested with focal areas of emphysema and necrosis in the diaphragmatic lobe (Figure 4).

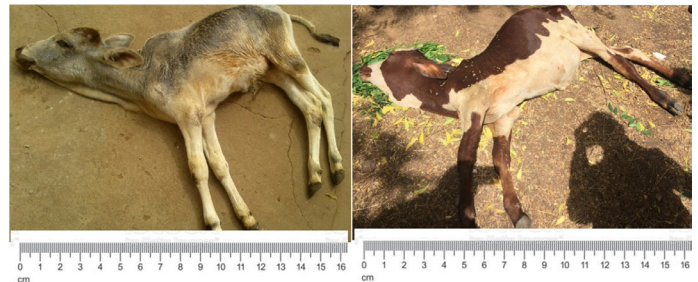


Figure 1: Patients on presentation (case I and II; left to right), the calves were both presented recumbent, moribund, weak and the abdomen was distended laterally and ventrally.

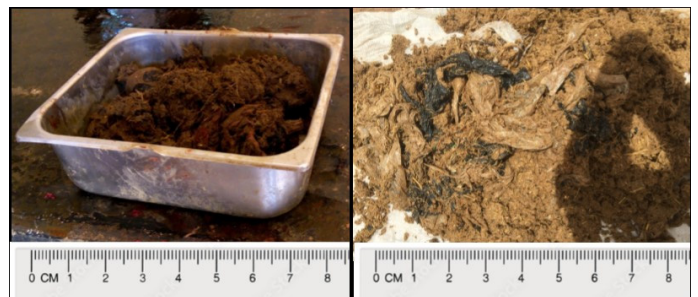


Figure 2: Constipated faeces and polyethene (non-biodegradable) materials recovered from both calves after necropsy examination, the black and whitish materials are polythene bags recovered from the rumens of the calves.

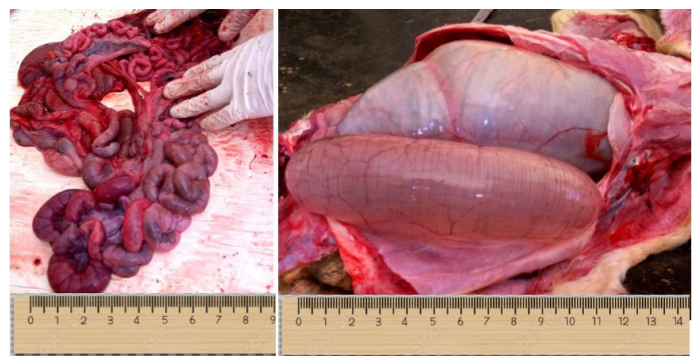


Figure 3: Congested, hemorrhagic and ballooned intestinal segments observed during necropsy examination.

CASE REPORTS 2

A 6 months old Sokoto Gudali calf weighing 40 kg presented to the ambulatory team of our large animal clinic with the complaint of absence of regurgitation, distended abdomen, recumbency, and constipation (Figure 1). The calf was purchased three months prior to presentation and was managed semi-intensively with five (5) other cows. There was no history of medication or vaccination in the heard. On physical examination, the ocular mucous membrane

was whitish, and rumen motility was low, bilateral ocular discharge, foamy salivation, and labored breathing were observed. The prescapular and submandibular lymph nodes were enlarged and a hard mass was palpated on the distended abdomen. On per rectal examinations, hard feces in rectum were found. The rectal temperature was subnormal (35.4 °C), respiratory rates were 12 cycle/min and the pulse rate was so weak and it was not detectable. Attempts to induce defecation using KC-bloat failed and the animal died on examination table.



Figure 4: Congested and hemorrhagic lungs observed during necropsy examination.

Following necropsy examination, polyethylene bags, rugs, ropes, and other indigestible materials mixed with ruminal ingesta were observed in the rumen (Figure 2). The small and large intestines were pale and almost empty. The spleen was pale and the urinary bladder was distended with urine.

RESULTS AND DISCUSSIONS

Cattle in developing countries where waste disposal is not controlled are more susceptible to ruminal impaction than small ruminants because they do not use their lips for prehension (Akinrinmade and Akinrinde, 2012). Owing to the lack of oral discrimination, cattle may ingest foreign particles that would otherwise be rejected by other species (Akraiem and Abd Al-Galil, 2016). Nutritional deficiency and poor feeding management practices can lead to the ingestion of foreign particles, which might eventually affect different organs of the animal, mainly the rumen and reticulum (Athar et al., 2010). When ingested, these foreign particles remain in the rumen of cattle, majorly compromising ruminal space and interfering with normal physiological functions of the rumen and to some extent cardio-pulmonary functions, thereby leading to weight loss and eventually the death of the animal (Igbokwe et al.,

2003; Remi-Adewunmi et al., 2004). Ruminal impaction as a result of indigestible foreign bodies, especially plastics, also leads to ruminal distension, passing of scanty or no feces, high mortality rates, and premature calling of sick cattle (Athar et al., 2010; Saulawa et al., 2012). Rumen impaction is a very rare occurrence generally in young animals, hence this warrant the report of this case. To the best of our knowledge, there was no reported case of rumen impaction in calves less than 6-month old. However, there was reported case of rumen impaction in Iranian goat-kid with successful diagnosis and surgical intervention to recovery as reported by Mozaffari et al. (2009). It is also worth noting that abomasal impaction was also recorded in a six-month old Turkish calf by Belge et al. (2017).

In both cases, the rumen was quite solid on palpation and the content consisted of polyethylene materials, rugs, and other indigestible materials. The history and clinical findings of our cases were similar to and compatible with those of previous reports in matured cattle above one year-old (Radostits et al., 2006; Ismail et al., 2007; Athar et al., 2010; Akraiem and Abd Al-Galil, 2016; Vanithal et al., 2010). Regarding the findings of the postmortem examinations, the intestines in both cases were empty and congested with little or no feed ingester, which was probably due to obstruction or blockage of the distal orifices (pylorus). Akraiem and Abd Al-Galil (2016) suggested that the presence of impacted material may partially or completely block rumino-reticular orifices. Mozaffari et al. (2009) also reported that the tightly impacted rumen may stop functioning because there is no contractile force sufficient to move the contents forward along the normal digestive course nor to regurgitate them from chewing the cud. The severely congested lungs and increased respiratory rate (32c/m) observed were probably due to the pressure exerted on the lungs by the impacted rumen. The increased respiratory rate is probably due to increased pressure of the dilated rumen on the diaphragm as reported by Bakhiet (2008). Although rumen impaction is common in ruminants, especially in matured ruminant above one-year old and has been studied in detail, very little is known about its incidence in calves. Furthermore, older animals are more susceptible to the development of ruminal impaction due to plastic materials than are young animals (Berrie et al., 2015). Cattle above 10 years of age and sheep and goats above 4-year of age were more frequently affected by indigestible materials than other age groups (Berrie et al., 2015; Fasil, 2016). Animals in this age group had more foreign bodies than young ones because of the gradual accumulation of these types of foreign bodies in the rumen (Roman and Hiwot, 2010). Therefore, this study reports the rare occurrence of rumen impaction in two calves. It is thought that the calves ingested these materials because of insufficient feeding by the owner or early weaning without

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sufficient milk supplementation, thus forcing them to eat foreign materials to satisfy their appetite. Additionally, it is a tradition practiced in some communities that calves are usually isolated and confined during the day, and the dams usually go out for grazing. Because of their increased metabolic demands, these practices may predispose them to ingest anything that comes their way to satisfy their energy demand.

CONCLUSIONS AND RECOMMENDATIONS

Foreign body impaction, especially in the rumen of calves, is a serious threat to the livestock industry and can lead to the premature death of young animals if immediate intervention has not been instituted. Livestock owners should ensure the proper feeding of their young ruminants and proper disposal of plastic materials around their farms. It can be concluded that rumen impaction with non-degradable materials can also occurred in young ruminants less than six-month old, with proper diagnosis, it can be detected and surgically treated to recovery.

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NOVELTY STATEMENT

There are very limited reports of rumen and gastric impaction with foreign bodies in younger animals less than six month old in literatures. Therefore, this make this case rare, hence the need for reporting it for clinician to take note of.

AUTHOR'S CONTRIBUTION

All the authors participated in the handling of the two clinical cases. USA and AAA drafted the initial manuscript, HAB, NA and EIO conducted the postmortem examination while ZS and AMM participated in taking the clinical images and selecting the appropriate images that were included in the draft. All authors participated in the manuscript draft and review of the manuscript.

CONFLICT OF INTEREST

The authors have declared no conflict of interest.

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