

Foreign body impaction in a captive Sambar (*Rusa unicolor*)

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Received: 24-05-2012, Accepted: 26-06-2012, Published online: 23-11-2012

How to cite this article:

Kumar V and Dhar P (2013) Foreign body impaction in a captive Sambar (*Rusa unicolor*), *Vet World* 6(1):49-50.

doi: 10.5455/vetworld.2013.49-50

Introduction

Foreign body impaction of the rumen induced by environmental pollution is fast becoming a major global problem in ruminants in most parts of the world [1,2]. The foreign body materials are eaten by the animals whenever there is scarcity of feed. This type of behavior is reported in ruminants particularly cattle [3]. Ruminal impaction due to indigestible foreign materials is hardly reported in small ruminants or wild ruminants as they tend to be selective feeders [4]. These indigestible materials when ingested by ruminants gets lodged in the rumen thereby compromising the ruminal space and interfering with the normal physiological functions of the rumen thereby leading to weight loss and death of the animal. The impaction of rumen results from the accumulation of the indigestible materials leading to distension of the rumen and passing of scanty or no feces [5]. We report here an unusual case of ruminal impaction due to indigestible foreign body in a sambar stag (*Rusa unicolor*).

Case History

A captive 12 years old sambar stag (*Rusa unicolor*) was presented with history of wasting, lagging behind during grazing, gradual inappetence along with rough hair coat for the last 15 days. No others signs or symptoms were shown by the affected animal. The animal had been reared in an open enclosure in captivity in the Zoological Garden in Dhauladhar Nature Park along with a group of 38 sambars of different age groups. The routine diet of the animal consisted of black gram, wheat bran, crushed maize, groundnut cake, salt, dry and green grass and animals were routinely dewormed as per schedule.

Methodology

The sambar was examined after immobilizing it by using a ketamine-xylazine combination ketamine hydrochloride (Ketamil®) @ 5 mg/kg body weight; and xylazine hydrochloride (Xylazil®), 0.25 mg/kg body weight. The dose rate of the anaesthesia was calculated on the basis of estimation of species specific weight of the animal. The mean rectal temperature, heart rate/minute and respiration rate/minute were recorded as 101.8°F, 68 and 22 respectively. The sambar was thin and weighed about 138 kgs. The

mucus membrane and capillary refill time were within normal limits. No abnormalities were found on auscultation of the cardiovascular and respiratory system. Peripheral lymph node enlargement was not palpable. The animal had normal cutaneous sensation of the limbs and intact sensory perceptions. The blood was collected from jugular vein in 10 ml EDTA vial. Blood was screened microbiologically while blood and fecal samples were screened for haemoprotozoans, complete blood count and endoparasites.

Results and Discussion

Haematological examination revealed hemoglobin count was 8.6 g/dl, packed cell volume 29 %, total erythrocyte count $7.4 \times 10^9/L$, differential leucocyte count $6.9 \times 10^9/L$, N 42%, L 57 %, M 0%, E 1%, B 0 %. Hematological examination showed a decrease in RBC count, haematocrit and haemoglobin content. No evidence of any microbial involvement was found on blood culture. The blood of the animal was also negative for any haemoprotozoan parasites while the feces turned out to be negative for endoparasites. As no specific symptoms were noticed in the animal except low haemoglobin and low packed cell volume count suggesting anemia, the animal was symptomatically treated for anemia and inappetence. The treatment of the animal was started with liver tonics, haematinics and multivitamin on alternate days for 3 occasions. However, no improvement was seen in the condition of the animal and the animal died after 15 days. The carcass of the animal was found to be emaciated with sunken eyes and rough hair coat.

A full postmortem examination immediately following death demonstrated no gross anatomic abnormalities. No notable macroscopic pathology was evident on vital organs aside from severe congestion and haemorrhages (Fig.1) on the ruminal wall with stunted ruminal papillae. On further dissection of rumen, there was accumulation of plastic gunny bags and nylon rope weighing about 4.5 kg impregnated with soil partially occluding the rumino- reticular openings of the rumen (Fig 2) and foreign body like nails and pebbles and sands in reticulum (Fig.3). Based on the above observations and the absence of any pathological changes, except the presence of foreign body in the rumen, we believe that the animal died due



Figure-1. Hemorrhages on ruminal surface

Figure-2. Rumen impacted with gunny bags

Figure-3. Reticulum with foreign body

to impaction of rumen.

The ingestion of materials other than normal feed referred to as allotrophagia resulting in a variety of nutritional deficiencies of either bulk, fibre or individual nutrients [6]. Abnormal appetite or pica may be related to phosphorus deficiency but also may be related to poor nutrition, anemia, iron and cobalt deficiencies and other unknown causes [7,8]. A significant decrease in Hb, PCV and erythrocyte count with leucocytosis and neutrophilia may be due to dietary deficiency and foreign body [10]. In the sambar stag, we also observed a decrease in haemoglobin and erythrocyte count along with neutrophilia suggesting anemia for which the animal was symptomatically treated. The causes of pica in this case could not be identified. The animal in the present case was given a balanced diet and had access to veterinary care in captivity. Unfortunately, the wild animals are often far away from their natural diet. The problem arises when animals living in a herd or group reach 30 to 40 numbers in any zoo. Competition of feed among the animals living in a larger herd in captivity leads to insufficient feeding to weak animals thus forcing them to eat foreign materials to satisfy their appetite. In the present case, animal had not shown any signs of bloat or abdominal discomfort. Usually bloat does not develop in cases of ruminal impaction [9]. Even though reports of foreign body in ruminants exist, but there is no report of foreign body in sambar as per best of our knowledge. The position of the impacted material in the rumen was more important than the size and weight of the indigestible foreign body in the causation of ruminal impaction. Many large and heavy impacted materials in the rumen do not cause clinical impaction except where the rumino-reticular orifices were partially or completely blocked by the presence of the materials or pressure. Additionally, the lodgement of these non biodegradable materials in the rumen of ruminants results in weight loss, high mortality rates thus resulting in premature slaughter of sick ruminants [10].

The history and post mortem examination of the animal showed that the sambar stag was suffering from pica that may have resulted in eating of unusual foreign material leading to accumulation of foreign body in the rumen ultimately leading to death of the animal. Correction of the clinical condition by rumenotomy was the only clinically viable solution in this case if diagnosed earlier.

The animals living in captivity should be supplied

adequate balanced diet to maintain a healthy and thriving condition. In case of herbivores, the feed must contain more roughages as herbivores have habits of cudging. To avoid such incidences in any zoo, there is a need to take preventive measures to check such instances. Zoo managers should inhibit or ban to carry any eatable items in the polythene bags by the visitors in the zoos. It is also recommended that the feeds given to captive animals should be properly checked, and care should be taken that the feed bags should be taken away from the enclosures after feeding of the animals in the captivity.

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