



Management of Pica in an Adult male German shepherd: A case study

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ABSTRACT

A dog weighing 45 kg was presented with symptoms of vomiting, painful defaecation and straining during urination. Pica was diagnosed from history of eating stones, clinical signs and radiographic findings of foreign materials impaction with opaque density consistent with stones within the abdominal cavity. Treatment involved the administration of analgesic, aluminium trisilicate salt, magnesium trisilicate tablet, fluid therapy and multivitamin with notable improvement after 2 weeks of treatment.

Keywords: Pica, Foreign body, Aluminium trisilicate salt, Magnesium trisilicate

Introduction

Pica refers to the consumption of non-edibles such as stones, sticks, fabrics, polythene particles, and plastics (Riva *et al.*, 2008). Gastro-intestinal foreign body impaction is a common cause of obstruction in dogs and cats leading to morbidity and mortality in dogs and cats of all ages (Parez, *et al.*, 2025).

Pica is also considered normal developmental and exploratory behavior in young animals (Capak *et al.*, 2001). It is commonly reported in cats and dogs and may be considered normal behavior by owners; the causes underlying the ingestion are barely investigated or mentioned (Hayes, 2009). It is usually diagnosed in dogs and cats and has been attributed to anemia as well as anxiety-related and other behavioral disorders (Masson, *et al.*, 2021). Studies have reported causes of pica which include, malnutrition, parasites, pancreatic failure, abdominal pain, liver encephalitis, hypothyroid, anemia and zinc intoxication (Papazoglou *et al.*, 2003; Halsberghe *et al.*, 2018; Lindquist and Lobetti, 2017). Behavioral changes have also been suggested to cause pica in animals such changes include, hypersensitivity-hyperactivity syndrome (Merola, 2000), oral obsessive-compulsive disorder (Overall and Dunham, 2002), anxiety (Riva *et al.*, 2008), or the owner's work routine (i.e., attachment issues) (Col *et al.*, 2016). In cats, it occurs in infants, stress associated with rehoming, territorial behavior (Bradshaw *et al.*, 1997) and abnormal appetite especially in the Burmese and Siamese breeds.

Pica can result in life-threatening complications caused by hypovolemia, toxemia, intestinal necrosis, perforation, or peritonitis (Hayes, 2009), especially when the foreign material is not spherical, i.e., linear or angular. The mechanisms of this behavior are critical to administering treatments, combining pharmacological, medical and cognitive interventions (Poynter *et al.*, 2011).

The care usually consists of the removal of the foreign body by endoscopy, medication, surgery and monitoring for possible complications

(Lindquist and Lobetti, 2017).

Case Presentation

Study Site

The study was carried in the veterinary clinic of Federal college of Agriculture Akure. Akure is a city in Ondo State, the western part of Nigeria (Latitude 5.219449; Longitude 7.270804) (Umoh and Odoaba, 1999).

History and Signalment

A 2-year-old male German shepherd dog weighing 45 kg was presented to the Veterinary clinic of the College of Agriculture Akure with the chief complaint loss of appetite, vomiting and weakness. History revealed that the dog frequently plays with stones around its environment. The client also observed the dog vomiting, straining during urination and defecating stones a month before presentation to the Veterinary Clinic. The vaccination record was up-to-date (for anti-rabies and Canine distemper, Canine hepatitis, Leptospirosis, Parainfluenza and Parvo viral enteritis (DHLPP-complex)).

Clinical manifestation

During the clinical examination, the vital parameters were recorded as follows: temperature at 43.9 °C (38.5-39.4 °C), pulse rate at 78 beats per minute (70-90 beats/min), and respiratory rate at 22 cycles per minute (15-30 cycles/minute).

Investigations

The blood sample was collected by cephalic venipuncture using a sterile needle and syringe; it was dispensed into an Ethylenediaminetetraacetate (EDTA)-containing sample bottle and sent to the Clinical Pathology Laboratory for a complete blood count. Thereafter, the dog was sent to the Radiology unit for radiographic examination.

Results of the Laboratory investigations

Haematological examination: Results of full blood count showed slight leukocytosis due to neutrophilia and monocytosis.

Radiographic examination revealed a radio-dense opacity of a foreign body within the abdomen of the dog which was suggestive of impaction with bones (Plate 1 A and B).

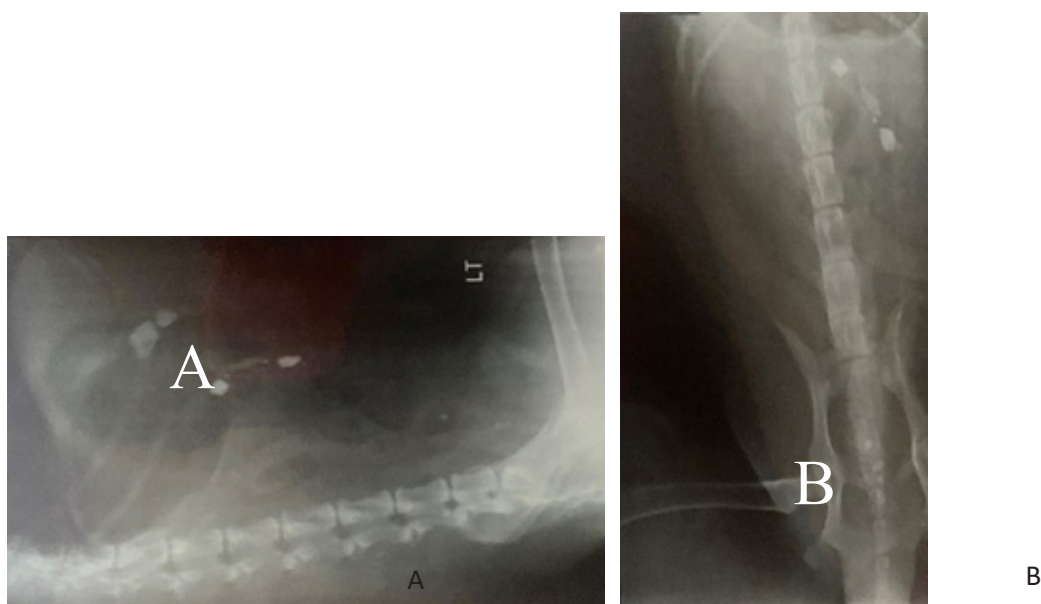


Plate1: Radiographic image showing stones in abdominal cavity (black arrow). Left Lateral View (A) and Ventro-dorsal view (B)

Tentative Diagnosis: Pica, Uroliths, Urinary Tract infection

Confirmatory diagnosis: Foreign body impaction with stone particles due to Pica

Treatment:

Vitamin B. complex 0.02 mg/kg, Intramuscularly (IM) x $\frac{5}{7}$

Aluminium trisilicate 400 mg/kg tablet orally for 2 weeks

Magnesium trisilicate 20 mg/kg orally for 2 weeks

Fluid therapy: 5% Dextrose saline 200ml Intravenously (I.V) $\frac{5}{7}$

5% Oxytetracycline 10 mg/kg I.M $\frac{5}{7}$

Discussion

Pica was diagnosed based on the case history, clinical signs and radiographic findings. The condition was managed medically to enable neutralization of stony particles as client refused to give consent to undertake surgery due to belief issues.

Dogs in Akure Metropolis are been kept over the years for security and companionship; these dogs involving different breeds are usually kept. Pica poses a great danger and severe GLT infliction which was also reported in a study conducted in Ibadan (Eyarefe, 2016). Ingestion of pieces of bones and stones especially (Hare and Tomasello, 2005) in an environment with so many stones serving as pre-

disposing factor to pica. Social restraint should be made to prevent cultivation of these habits (Overall, 2005). In this case, the patient was the only dog owned by the client and had no companion, as such playing with stones could not be unusual. The case presentation necessitated immediate conservative management using medication, with the resulting positive effect. Pica habit has been linked with deficiencies of minerals such as zinc and iron.

The difficulty in defecation and defecating stones in this case was similar to a previous report of Bradshaw *et al.* (1997) where it occurred in cats. Similarly, high temperature and respiratory rate noticed could be attributable to ongoing stress due to lack of metabolism of these stones (Gitlin *et al.*, 2007; Avazi *et al.*, 2019).

The results of full blood count showed slight leukocytosis due to neutrophilia and monocytosis which could be an indication of stress and secondary bacterial infection. The radiographic examination revealed materials (stones) within the abdominal cavity, which is similar to findings reported by Eyarefe (2016). Radiography and ultrasonography have been recommended as routine procedures to facilitate diagnosis of the bowel and internal cavities (Mshelia *et al.*, 2015). In our case, diagnostic imaging through radiography was used to identify the foreign materials in the body.

Medication choice was prompted, due to the mechanism of action of the drug. Magnesium trisilicate was administered at 20 mg/kg P.O once daily for two weeks, it is one of many salts of magnesium used clinically for the relief of the symptoms of dyspepsia by virtue of its antacid properties. It is often used to relieve gastrointestinal symptoms of dyspepsia, heartburn, gastroesophageal reflux disease, and constipation by acting as antacids and laxatives (Keith, 2007). Magnesium trisilicate is rarely given alone and is usually combined with other antacids such Aluminium trisilicate. The anion attached to the magnesium can affect the pharmacokinetics and the delivery of the elemental

magnesium to the target site (Keith, 2007).

Aluminium trisilicate was given at 400 mg/kg to reduce gastric acid by binding with phosphate in the intestine, and then is excreted as aluminium carbonate in faeces. Aluminium carbonate may increase the absorption of calcium due to decreased serum phosphate levels. The drug also has astringent and adsorbent properties. The therapeutic effect neutralizes or increase gastric pH, reduces phosphates in urine, preventing formation of phosphate urinary stones, reduces serum phosphate levels and decreases fluidity of stools (Mathew and Graeme, 2010). Other medications administered include, Vitamin B-complex at 0.02 mg/kg, administered to boost the immune system, 5% Dextrose saline 200 mL I.V for 5 consecutive days given to replace lost electrolytes while supplementing transient energy, and antibiotic which was given to prevent secondary bacterial infection. The medications were administered for 2 weeks and the dog showed improvement afterwards.

Most dog owners are not aware of the danger posed by pica habit in dogs. The client was advised to observe for pica habit and efforts should be made to prevent cultivation of this habit. Attention should also be given to minimize boredom by providing dogs with safe play toys in addition to maintenance of sound health by timely and proper veterinary care.

Conclusion

Foreign body ingestion is becoming a serious medical problem in dogs, putting the dog's life at increased risk. This case suggests that it is related to behavioral disorders. Hence, behavioral consultation should be encouraged on any dog reported to ingest non-edible objects. Treatment showed promising effect as the animal recovered after 2 weeks of treatment.

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