Small intestinal foreign body in an adult Eclectus parrot (*Eclectus roratus*)

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ABSTRACT

A 14-month-old female Eclectus parrot (*Eclectus roratus*) was presented with a 4-week history of bloody diarrhea and depression. No additional information could be gained from physical examination. Only selected diagnostic tests (faecal examination, haematocrit, aspartate aminotransferase, and uric acid) could be performed due to financial constraints, but all where within reference range. Unspecific antibiotic treatment was started and the bird responded well initially, but had to be readmitted 2.5 weeks after initial presentation. Four weeks after initial presentation the owner finally consented to taking whole body radiographs and a diagnosis of an intestinal foreign body could be made. The foreign body was surgically removed 2 days later. The bird recovered uneventfully after surgery and was still in good health 1 year after surgery. This article emphasises the importance of diagnostic imaging in the avian patient. A brief review of avian gastrointestinal foreign bodies is given (concentrating on the psittacine patient) and the importance of distinguishing metallic from non-metallic gastrointestinal foreign bodies are discussed.

Key words: avian, bird, Eclectus parrot, *Eclectus roratus,* foreign body, intestinal, psittacine, radiography.

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INTRODUCTION

Ingestion of metallic foreign bodies is not uncommon in the avian patient. Particularly Galliformes, Anseriformes Columbiformes, Gruiformes, Pelecaniformes, Psittaciformes and ratites[12] appear to be predisposed. In captive Psittaciformes ingestion of lead is extremely common[12]. Even though foreign bodies are typically located in the proventriculus and ventriculus, metallic foreign bodies can be found anywhere in the gastrointestinal tract. Non-metallic foreign bodies have only occasionally been described within the intestinal tract. A 17-inch string of beads could be palpated in the crop of an Amazon parrot[16]. Barium contrast radiographs were used to confirm that the string of beads passed on to the small intestine. Another article reported the formation of an enterolith in a budgerigar (*Melopsittacus undulatus*) due to a tiny linear foreign body in the small intestine[10].

In all the above cases the diagnosis was not based on radiography, but on palpation or necropsy. This also applies to an umbrella cockatoo (*Cacatua alba*) where the intestinal foreign body could be seen on contrast radiographs retrospectively[1].

This case report focuses on the radiographic findings of a small intestinal foreign body in an adult Eclectus parrot (*Eclectus roratus*), and emphasises the importance of distinguishing metallic from non-metallic intestinal foreign bodies in the psittacine patient[15].

CASE HISTORY

A 14-month-old female Eclectus Parrot was presented with a history of 4-week bloody diarrhea and depression. No additional information could be gained from physical examination. Only selected diagnostic tests (faecal examination, haematocrit, aspartate aminotransferase, and uric acid) could be performed due to financial constraints, but all were within normal reference ranges. Unspecific antibiotic treatment was started and the bird initially responded well, but had to be readmitted 2.5 weeks after initial presentation. Four weeks after initial presentation the owner finally consented to taking whole body radiographs.

Radiographic findings

A high-output rotating anode fixed X-ray apparatus (Polymat 50, Siemens A.G., Erlangen, Germany) and a slow speed rare earth screen (Trimax T2, 3M, Milan, Italy) with compatible film were used. The source-to-image distance was 109 cm. The bird was chemically restrained with isoflurane inhalation anaesthesia using a mask. Standard left-to-right (in lateral recumbency) and ventrodorsal (in dorsal recumbency) whole-body radiographs[11] were obtained using 46 kVp and 4 mAs.

On survey radiographs (Fig. 1a,b) marked proventricular and moderate intestinal dilation with focal gas accumulation was noted. Both the proventriculus and ventriculus contained large amounts of grit (mineral opacities) filling the entire lumen of the latter.

Widening of the liver silhouette could not be adequately assessed due to the moderate tilting of the ventrodorsal radiograph (Fig. 1a). A tubular (2.5 × 0.3 cm) mineral opacity with well-marginated cortical appearance could be seen in the central coelomic cavity at the level of the acetabula with a diagonal orientation from cranioleft to caudoright on the VD view (Fig. 1a). On the lateral view (Fig. 1b) it was positioned just ventrally to the acetabula, with a 30-degree craniocaudal angulation.

A radiographic diagnosis of an intestinal foreign body with associated pro- and ventricular grit impaction, ileus and enteritis was made. A gastrointestinal contrast study and/or transcutaneous ultrasound to determine the exact anatomical location of the foreign body and to rule out perforation or obstruction was advised, but not performed.

Conservative treatment with laxatives and motility enhancers was attempted; however, the intestinal foreign body remained in fairly unchanged position on follow-up radiographs. This prompted the decision for surgery.

Surgical findings

The intestinal mineralised foreign body was removed surgically together with the surrounding necrotic proximal part of the duodenum 2 days after the radiographic diagnosis. No perforation or secondary indication thereof could be seen. The duodenal foreign body was extremely brittle and broke up post-surgically when

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trying to isolate it from the excised duodenum. A central fibre-like structure appeared to be present. No further analysis of the foreign body was performed.

The bird made an uneventful recovery. Post-surgery radiographs were normal and no further signs of an intestinal foreign body were present. The bird was still in good health 1 year after surgery.

DISCUSSION

Gastrointestinal foreign bodies should be classed as metallic and non-metallic in the psittacine patient, with the latter being divided further into gastric and intestinal foreign bodies.

Metallic foreign bodies are by far the most common. They can be found throughout the gastrointestinal tract, although most commonly found in the proventriculus and ventriculus. Identification of metallic opacities in the gastrointestinal tract of birds with clinical signs of heavy metal intoxication is suggestive of heavy metal toxicity, even though a definitive diagnosis requires blood sampling[7]. The most common heavy metal intoxications are zinc toxicosis and lead intoxication, which cannot be radiographically differentiated[7].

Fortunately, the therapy is the same for poisonings caused by either of these heavy metals. Most cases of lead and zinc ingestion can be managed medically and do not require surgery[7].

Non-metallic gastric foreign bodies have also occasionally been described in the psittacine patient[5,6,9] with juvenile birds being predisposed[2,4,8,14]. Ingestion of foreign bodies is often seen in association with enteritis and it might be challenging to decide what is the primary cause. However, in the case of foreign body ingestion in an adult bird, an underlying primary disease must always be ruled out, since birds tend to consume large quantities of inappropriate feed material when a primary disease, particularly of the gastrointestinal tract, exists. Depending on clinical presentation, conservative treatment or surgery might be indicated.

By contrast, non-metallic intestinal foreign bodies are extremely rare[1,10,16], and diagnosis in the described cases was based on palpation or necropsy. In only 1 case could the intestinal foreign body be seen retrospectively on radiographs in a gastrointestinal contrast study[1]. To the author's knowledge, this is the 1st described *ante-mortem* radiographic diagnosis of a small intestinal non-metallic foreign body in a psittacine patient. All of the previously described intestinal foreign bodies were also linear ones[1,10,16]. This would also explain how the foreign body could pass on into the intestine, since in birds, the function of the ventriculus is to break down all larger particles and only allow passage of smaller ones, hence providing a physiological barrier to foreign bodies passing into the intestinal tract. It appears likely that the foreign body in this case was originally also a tiny linear foreign body, which formed the nidus for an enterolith similar to a previously described case[10], since a small fibre-like centre appeared to be present. Unfortunately the foreign body was lost to further investigation.

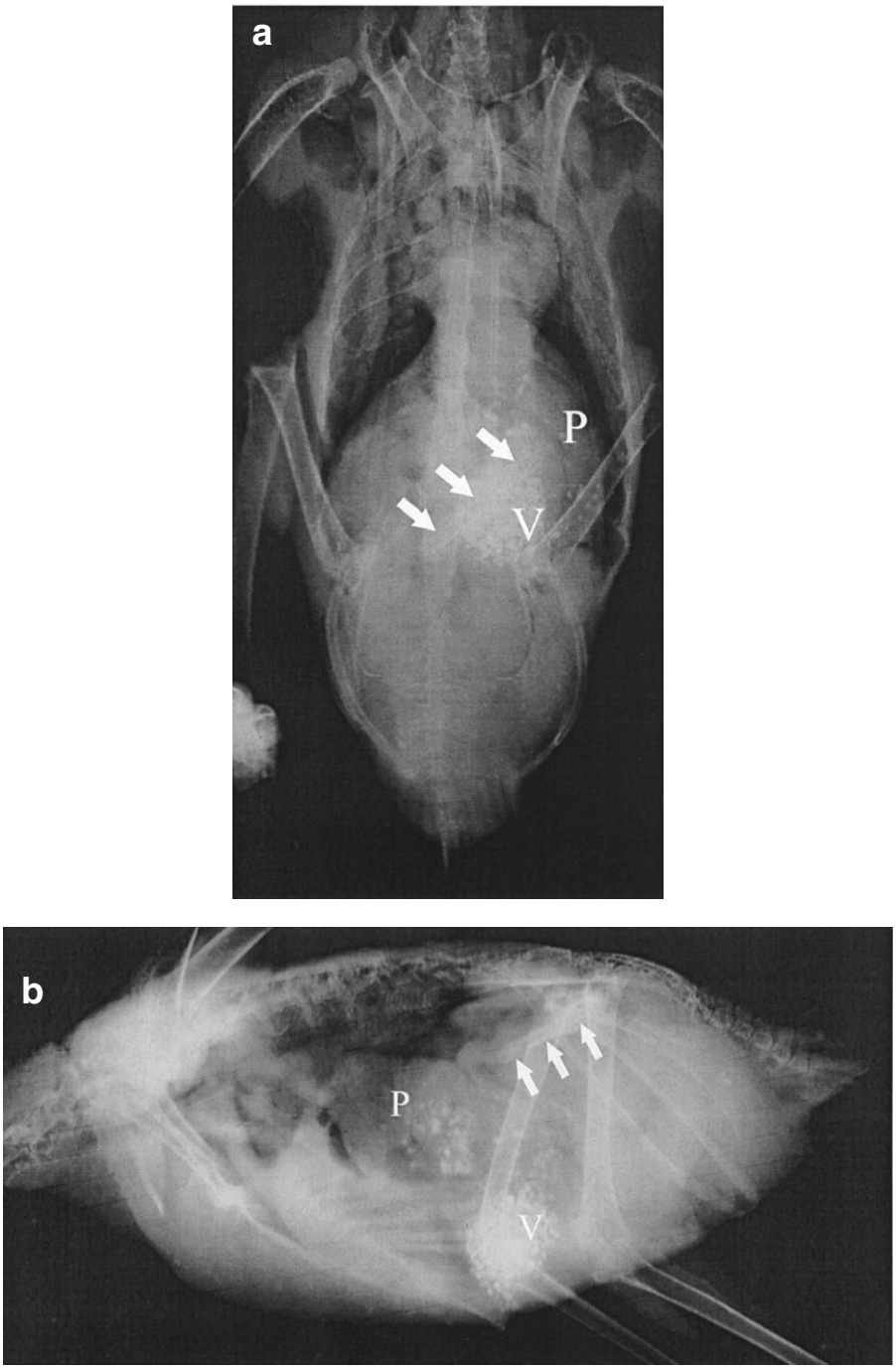

Fig. 1: a, **Ventrodorsal survey radiograph of a 14-month-old female Eclectus parrot. The radiograph is moderately tilted, and the black parallel linear artifacts represent roller markers. Overload of proventriculus** (P) **and ventriculus** (V) **with grit. Prominent bulge of the sac-like proventriculus towards the left is indicative of a marked dilation. Multiple tubular soft tissue opacities filling the entire caudal coelomic cavity represent distended intestinal loops. The tubular mineral opacity intestinal foreign body** (arrows) **is difficult to see, superimposed over the grit-filled ventriculus diagonally.**

b, Left-to-right lateral survey radiograph of the same bird. Note that both the wings and legs were positioned slightly apart with the dependent (right) **wing or leg slightly more cranially. Black parallel linear artifacts represent roller markers. Overload of proventriculus** (P) **and ventriculus** (V) **with grit. Note the tubular mineral opacity intestinal foreign body** (arrows) **cranioventrally to the acetabula.**

Psittacine patients with gastrointestinal non-metallic foreign bodies are presented and/or diagnosed late (often only months after initial presentation), since signs are often nonspecific and birds hide clinical signs as part of the survival strategy in the wild. Late diagnoses are believed to contribute to high mortalities during surgical procedures, leading to a poor to grave prognosis[3]. This case once more emphasises the importance of diagnostic imaging modalities in avian practice. Radiography and contrast radiography should be a routine diagnostic procedure, with similar indications as in small animals. It should be particularly considered in avian patients not responding to conservative treatment of gastrointestinal disease and patients who are presented with nervous symptoms, diarrhoea, abdominal pain or are simply depressed. If a gastrointestinal perforation is suspected, an organic iodine contrast agent is recommended to prevent contamination of the coelomic cavity with barium[13]. Furthermore, if a radiographic diagnosis of a non-passing intestinal foreign body is made in a psittacine patient, surgery is indicated and hence a barium contrast study is contra-indicated for the same reason. Ultrasound should be considered as a complementary diagnostic imaging modality. A high-frequency transducer and a small footprint is, however, required and this modality is highly examiner dependent.

CONCLUSION

This case is believed to be the 1st *antemortem* radiographic diagnosis of a small intestinal non-metallic foreign body in a psittacine patient. It emphasises the importance of diagnostic imaging in the avian patient and of distinguishing metallic from non-metallic gastrointestinal foreign bodies. It is further postulated that small intestinal foreign bodies in the psittacine patient are linear foreign bodies, occasionally forming the nidus for an enterolith.

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