

Psychotherapy for Two Major Earth Hooved Animals that Ingested Metallic Foreign Material, Diagnosis, and Outcomes

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Abstract

A 3-year-old llama and a 14-year-old alpaca both independently presented with hazy abdomen discomfort symptoms. The alpaca's blood work was ordinary, but the llama's blood work revealed symptoms of infection, and both animals' abdominal ultrasonography was clear. In both cases, abdominal radiography identified a metallic gastrointestinal foreign body. The foreign entities were removed from the proximal duodenum in the llama and the C3 compartment in the alpaca through a ventral midline laparotomy. Both camelids received supportive care, non-steroidal anti-inflammatory medications, and broad-spectrum antibiotics. After their surgeries, the alpaca and llama were released from the hospital 16 and 8 days later, respectively. While the llama was doing well 4 months after being released, the alpaca was put to death 2 months later due to recumbency of unclear aetiology. This article suggests that hardware disease should be regarded as a differential diagnosis and highlights the use of abdominal radiography in camelids exhibiting vague clinical indications.

Background: In camelids, digestive disorders are typical, and llamas and alpacas are particularly susceptible. Due to the hazy clinical symptoms displayed by the majority of patients and the restrictions placed on rectal examination due to patient size, diagnosing gastrointestinal illnesses in camelids is difficult 1, 2. 1 Therefore, it is likely that surgical abdominal emergencies go undiagnosed, and doctors should concentrate on early identification and prompt surgical management. Compared to cattle, who frequently present with traumatic reticuloperitonitis (TRP), also known as "hardware disease," llamas and alpacas are selective eaters² and are thought to be far less prone to consume metallic foreign items. 3, 4 The diagnosis, course, and prognosis of this disease in camelids are all poorly understood. To study abdominal diseases in camelids, physical examination, complete blood count (CBC), chemistry analysis, and abdominal ultrasonography are widely used 1, 2, but abdominal radiography is the gold standard for finding TRP in cattle. 3, 5, 6 The difficulties in diagnosing, treating, and providing post-operative care for camelids presenting to a teaching hospital with gastrointestinal metallic foreign bodies are discussed in this case report.

Keywords: Psychotherapy; Diagnosis; Hooved animals; Camelids

Introduction

An acute pain and/or neurologic episode that occurred 2-3 hours prior to admission brought a 14-year-old female, whole, non-pregnant alpaca to the Vetsuisse Faculty Zurich Veterinary Medicine Teaching Hospital (VMTH), where it was discovered acutely reclined, vocalising, and unable to stand. The alpaca was able to stand up twenty minutes after the tragedy, but she remained anorexic and lethargic with a stiff walk. The alpaca was given a non-steroidal anti-inflammatory medicine (Metamizol, intravenously [IV], dose unknown) by the referring veterinarian (RV), who also forwarded the case to the VMTH for additional assessment. Prior to this incident, the alpaca was said to be in good health and shared a pasture with 11 other healthy alpacas. The herd was not immunised, but deworming was carried out when necessary [1-5] and frequent checks for internal parasites were made. The alpaca was tachypneic (40 breaths per minute, reference range: 15-30 breaths per minute⁷), calm but attentive, and reluctant to move when it arrived at the VMTH. The heart rate and rectal temperature were also (Figure 1) within normal ranges. The alpaca's mucous membranes were pink, and based on a capillary refill time of 2 seconds and slightly diminished skin turgor, it was determined that it was only mildly dehydrated.

Case Presentation, Investigation, Treatment and Follow-Up

The alpaca's breathing pattern showed greater abdominal effort, and thoracic auscultation revealed increased bilateral vesicular respiratory noises. While it hurt to palpate the belly, especially the ventral abdomen, there was no sign of abdominal distension. No

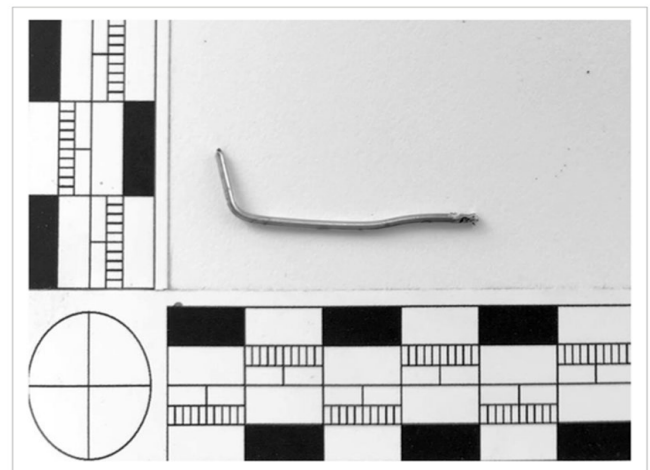


Figure 1: A metallic foreign body was removed via ventral midline laparotomy from the C3 compartment of a 14-year-old female alpaca.

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contractions of the first gastric compartment (C1) and diminished small intestine borborygmi were heard during abdominal auscultation. Auscultation by percussion and [2-10] succession was unfavorable. The results of the neurological and musculoskeletal exams were unremarkable. The alpaca weighed 80 kg, and its body condition rating was 4.5 out of 5. Faeces were of a typical volume, Colour, consistency, and odour, according to a digital rectal exam. Only regeneration left shift neutrophilia (band neutrophils: 0.19 10³/l, reference range: 0-0.1 10³/l; segmented neutrophils: 16.33 10³/l, reference range: 3.4-9.1 10³/l) was shown to be significant on the CBC. Hyperglycemia (18.7 mmol/L, reference range: 5.4-7.3 mmol/L) and modestly reduced magnesium (0.67 mmol/L, reference range: 0.8-1.1 mmol/L) and phosphorus (0.93 mmol/L, reference range: 1.1-2.8 mmol/L) were among the pertinent abnormalities on the serum biochemistry test. Thoracic and abdominal ultrasonography as well as radiography was carried out in order to look into potential causes for the increased respiratory rate and exertion as well as the abdominal pain. Except for a few small, hyperechogenic regions that are compatible with excessive mineralization in the hepatic parenchyma, the ultrasonographic findings were otherwise normal. Thoracic radiographs were clear, however abdominal radiographs showed mineralizations in the liver parenchyma and a metallic foreign body extruded in C1 (Figure 1). Differential diagnoses for the hepatic alterations included chronic cholangitis caused by liver fluke infestation, degenerative, aging-related changes, and neoplasia. A diagnosis of foreign body ingestion was made. *Dicrocoelium dendriticum* or *Fasciola hepatica* were not detected during a faecal parasitological study and liver enzyme activity also refuted this differential diagnosis. Neoplasia could not be completely ruled out, but was viewed as less likely given the healthy state of the body and the absence of any visible metastases. The alpaca maintained stability during the investigation of this case, displaying normal vital signs, no change in attitude, and normal faeces and urine for three days. It refused to lie down, remained anorexic, and appeared sensitive to abdominal palpation. Four days after the presentation, a laparotomy was done to remove the foreign body. Following surgery, supportive care included continued administration of butorphanol (0.05 mg/kg, IM, Butomidor, Streuli Tiergesundheits, Uznach, Switzerland) as needed for initial pain management, amoxicillin + clavulanic acid (8.75 mg/kg, IM, SID, 10 days total), meloxicam (0.5 mg/kg, IV, SID, 5 days total), and aluminium oxide and magnesium hydroxide orally for prevention of C3 ulcers. Based on routine blood gas measurements, electrolytes were added to the CRI as needed. The alpaca was awake and the physical examination results were within normal ranges in the days after surgery, but it was still hyporexic, had impaired gastrointestinal motility, and was passing little to no faeces. The alpaca was discovered to be hyperthermic (39.2°C, reference range: 37.5°C-38.9°C) and lethargic five days after surgery. Reduced respiratory sounds, minor nasal discharge on both sides, and an empty, hypomotile gastrointestinal tract were also present. While thoracic ultrasound showed mild pleural effusion and atelectasis of the cranial lung lobes, beginning at the sixth intercostal gap bilaterally, abdominal ultrasound showed no symptoms of peritonitis. By cytology and culture of the pleural effusion, a sample of which was obtained by right-sided thoracocentesis in the sixth intercostal space, the pulmonary pathology was further examined. A transudate with high protein content (protein 22 g/L) and few [9] mesothelial cells was seen on cytology, and limited mixed growth was seen in bacterial culture. Heart failure, acute pleuropneumonia, neoplasia, and hypoproteinemia were among the possible differential diagnosis. The alpaca's temperature increased (to 39.4°C) and the nasal discharge became thicker and more green, so it was decided to switch antimicrobials to danofloxacin (1.25 mg/kg,

SID, IV, 5 days total, Advocid 2.5%, Zoetis, Delémont, Switzerland) and ketoprofen (3 mg/kg, IV, Rifen, Streuli Tiergesundheits, Uznach, Switzerland). In the days that followed, the alpaca's general attitude, appetite, gastrointestinal motility, faecal output, and nasal discharge all dramatically improved, and the pleural effusion significantly shrank, suggesting an infected pleuropneumonia responding to the antimicrobial medication employed. After spending 20 days in the hospital and recovering from surgery for 16 days, the alpaca was released from the hospital. The alpaca was said to be doing well for the first three to four weeks following release before beginning to exhibit signs of stomach discomfort and reducing food intake once more. The owner discovered the alpaca in lateral recumbency with a swollen and sore abdomen two months after discharge. The RV euthanized the alpaca because the owner did not want any additional testing or medical attention. There was no postmortem examination.

Differential Diagnosis

Despite having normal faeces and largely normal vital and clinicopathological statistics, both camelids displayed variable stomach pain symptoms. Ulceration of [8] the C3 compartment, peritonitis, and partial impaction/obstruction were possible differential diagnoses. Based on radiographic data, the diagnosis of metallic foreign body ingestion was made in both cases.

Discussion

While camelids have not been frequently reported on and have never had a successful conclusion, the ingestion of metallic foreign materials is a common occurrence in cattle and frequently results in TRP3, 4. 9 In one study, an alpaca with traumatic gastroperitonitis was documented along with clinical, surgical, and postmortem findings; however, no radiographic evaluation was done. 9 In that case report, the alpaca was characterised as having obvious symptoms of stomach pain, distension, and infection. A wire had pierced the C2, travelled through the abdomen, and led to disseminated septic peritonitis. On the other hand, both of our camelids initially displayed quite vague symptoms of stomach pain.

Conclusion

The owner and RDVM may have misidentified the painful encounter with the alpaca as a colic episode in which the foreign object may have triggered a pain response. It's noteworthy that neither the alpaca nor the llama displayed tachycardia or decreased faecal output upon admission to the hospital, signs that are typically connected to gastrointestinal diseases in these animals.

Conflicts Of Interest

There are no conflicts of interest, according to the authors.

Ethics Statement

The medical records of two patients served as the basis for this case study. There was no request for ethics committee permission.

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