Case Report  Rapport de cas

Surgical retrieval of a metallic foreign body from the spleen of a dog
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Abstract — This is the first report of a metallic foreign body in the spleen of a dog. The animal had abdominal discomfort with a tucked-up abdomen and occasional vomition. Radiography and ultrasonography were used to identify a splenic foreign body which was surgically removed through a ventral midline celiotomy. Migration of the foreign body through the stomach wall was suspected as the most likely cause.

Résumé — Récupération chirurgicale d’un corps étranger métallique de la rate d’un chien. Il s’agit du premier rapport d’un corps métallique étranger dans la rate d’un chien. L’animal éprouvait de l’inconfort abdominal avec un abdomen tendu et des vomissements occasionnels. La radiographie et l’échographie ont été utilisées pour identifier un corps étranger dans la rate qui a été enlevé par chirurgie à l’aide d’une laparatomie ventrale au milieu du ventre. On soupçonne que la migration du corps étranger dans la paroi de l’estomac était la cause la plus probable.

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Intra-abdominal foreign bodies are common in dogs and a piece of wood in the jejunum (1), a magnet adhered to the omentum (2), a linear foreign body in the intestines (3), and intraperitoneal gauze (4) have all been reported. A splenic foreign body composed of plant material has also been reported in a cat (5). To the authors’ knowledge there are no reports of a splenic metallic foreign body in a dog. The present report describes the successful outcome of surgical intervention to retrieve a broken hypodermic needle from the splenic parenchyma in a German shepherd dog.

Case description
A 4.5-year-old male German shepherd dog, weighing 35 kg was presented to the Teaching Veterinary Hospital with signs of restlessness and tucked-up abdominal posture for the preceding 5 d. Physical examination of the animal revealed no significant abnormality except pain on palpation of the sublumbar area. The animal had vomited occasionally but its appetite was normal. Analysis of the blood revealed no significant alterations except mild hypoproteinemia (total protein = 53 g/L; reference range: 60 to 75 g/L). Lateral and ventro-dorsal radiographs of the abdomen revealed a radiopaque potential linear foreign body of about 2.4 cm in length in the upper left abdominal quadrant (Figures 1 and 2). The precise position of the metallic foreign body could not be ascertained but it appeared to be lying caudal to the spleen in the intestine. Ultrasonography of the abdomen with a 7.0 MHz linear transducer showed the foreign body in the splenic parenchyma as a hyperechoic spot in the transverse plane (Figure 3). In the sagittal plane the foreign body appeared as a hyperechoic line within the splenic parenchyma (Figure 4). No hypoechoic pockets were seen around the foreign body on the ultrasound image. Exploratory laparotomy was scheduled on the subsequent day to retrieve the foreign body.

The linea alba site was prepared for aseptic surgery. The dog was preanaesthetized using butorphanol (Butodol; Neon Laboratories, Thane, India) at 0.2 mg/kg body weight (BW),
acepromazine (Ilium Acepril-10; Troy Laboratories PTY, Smithfield, NSW, Australia), 0.05 mg/kg BW, glycopyrolate (Pyrolate; Neon Laboratories), 0.01 mg/kg BW, IM followed by induction with thiopentone sodium 2.5% (Thiosol; Neon Laboratories, Mumbai, India), 8 mg/kg BW by IV bolus. Anesthesia was maintained with a mixture of oxygen and isoflurane 1% to 1.5%. A ventral midline celiotomy was performed and on exploration of the spleen a hypodermic needle was seen piercing the greater curvature of the spleen at about the middle of the spleen. The tip of the needle was observed outside of the splenic parenchyma. The needle was carefully removed with the help of an artery forceps (Figure 5) and was found to be a broken piece of a 24 G hypodermic needle. No significant injury or hematoma was observed at the site of penetration of the needle. Careful examination of the stomach wall revealed no perforating tract. The abdominal wound was closed in a routine manner. Following surgery the dog was administered cefotaxime (Taxim; Alkem Laboratories, Mumbai, India), 20 mg/kg BW, q12h for 7 d and meloxicam (Melonex; Intas Pharma, Ahmedabad, India), 0.2 mg/kg BW, q12h for 3 d. The skin sutures were removed on the 10th day after surgery. The primary complaint of restlessness and a tucked-up posture was relieved by the 1st post-operative day and the animal recovered uneventfully.

Discussion

Foreign bodies in the gastrointestinal tract of canines are common and balls, stones, rubber, bones, and plastic are usually reported (6). Abdominal foreign bodies in organs other than the gastrointestinal tract are not common in canines, and are mostly iatrogenic consisting of gauze or surgical instruments left during surgery (4). To the authors’ knowledge there are no reports of metallic splenic foreign bodies in dogs. A splenic foreign body in a cat was reported to consist of plant material (5). In the present case the foreign body was a broken 24 G hypodermic needle. It is possible that after oral ingestion, the needle might have penetrated the spleen through the stomach wall. However no tract was detected in the stomach wall at the time of surgery.
The occasional vomition may be related to the foreign body in the gastric region, which subsided subsequent to migration of the needle into the splenic parenchyma.

Migration of an ingested sewing needle to the pancreas tail and spleen has been reported in humans (7). However, in the present case of the dog, no tract was visualized in the stomach wall at the time of surgery. Brankov (7) opined that perforation of the gastrointestinal tract by an ingested foreign body was difficult to presume when no peritonitis or abscess formation was observed. It is also possible that the needle might have accidentally penetrated through the skin into the spleen of the dog. However, the owner did not notice any injury on the skin of the lateral abdominal wall and there was no history of subcutaneous injection or fine-needle aspiration biopsy. Moreover, the tip of the needle was protruding outside the splenic parenchyma, which makes this possibility less likely.

The ventro-dorsal radiograph identified the foreign body in the abdomen but the exact location could not be ascertained. In a similar case in humans (7), a survey radiograph was not able to localize the foreign body in the spleen and computerized tomography was required to confirm the location. In the present case, however, ultrasonography was precise in diagnosing the exact site of the needle in the splenic parenchyma. The ultrasonographic features of a hypodermic needle in the splenic parenchyma have been described earlier (8,9) during ultrasound-guided biopsy of the spleen in dogs. In contrast, Culp and Aronson (5) reported that ultrasonography failed to localize a splenic foreign body composed of plant material, in a cat. In the present case the metallic nature of the foreign body might have aided in ultrasonographic visualization.

The absence of hypoechoic pockets around the metallic foreign body in the splenic parenchyma suggested that there was no inflammatory or hemorrhagic fluid accumulation. This finding ruled out the need for splenectomy at the time of surgery and helped in predicting a favorable outcome of the surgical intervention. However, earlier workers reported that splenectomy was essential in cases of splenic foreign body in a cat (5) and a human (7).

It can be concluded that a splenic foreign body can be one of the causes of abdominal pain in dogs. Ultrasonography was reliable in localizing the metallic foreign body in the splenic parenchyma and surgical retrieval of the metallic splenic foreign body without splenectomy may be successful for managing such cases.

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References