



Case Report

UNCOMMON CAUSE OF ACUTE ABDOMEN IN A DOG: TORSION OF THE SPLEEN – CASE REPORT AND REVIEW

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ABSTRACT

Splenic torsion is an extremely rare disease both in human and animals. This is an emergency condition whose clinical presentation could be referred to as acute abdomen. The definite diagnosis is difficult to make and requires current image techniques, such as Doppler ultrasound and Computed tomography scan. An early operation is strongly recommended to avoid complications. In the present study a case of splenic torsion in German shepherd male dog was described. The patient was presented with signs of fever, inappetance, depression and vomiting from time to time in the course of two days. On the basis of history, physical examination, radiography and ultrasound a primary diagnosis of generalized splenomegaly was made and splenic torsion was suspected. After splenectomy the animal recovered well without problems.

Key words: splenic torsion, infarction, abdominal pain, dog

INTRODUCTION

Splenic torsion is a very uncommon disease both in human and animals. It is an emergency condition and requires immediate surgical operation. Life-threatening complications due to torsion of the spleen's vascular pedicle are results of splenic infarction, portal hypertension, and bleeding. The clinical presentation could be referred to as acute abdomen. Early intervention is necessary to reduce the risk of these complications (1). The precise diagnosis can be made only by Doppler ultrasound and Computed tomography scan (2).

The first case of torsion of the spleen in dogs was reported in 1967 (3). Since then only few papers have described this disease in dogs and other animals such as alpaca (4). Among 87 cases of canine splenic abnormality only 3 cases presented splenic torsion with infarction. The splenic alterations have been detected clinically by abdominal palpation or radiography, or at exploratory laparotomy (5).

CASE HISTORY

An 8-years old German shepherd male dog weighing 40 kg was presented in the Small Animal Clinic of Trakia University Animal Hospital. It had a history of fever, inappetance, depression and vomiting from time to time throughout two days. The animal had had a medical check up, plain and contrast X-ray examination previously. A treatment with antibiotics, non-steroid anti-inflammatory drugs and spasmolytics had been prescribed but without any improvement of the condition.

We performed a physical examination of the patient and did not find changes in core body temperature, heart rate, and respiratory rate. The mucous membranes were flushed. Superficial lymph nodes were not enlarged or inflamed. A firm painful immovable oval-shaped mass was found on abdominal palpation. It was located between rib arch and pelvic inlet near the ventral abdominal wall.

Blood cells count and serum biochemical profile revealed non-specific alterations, such as mild leucocytosis and slightly increased aminotransferase activities.

Lateral radiography of the abdominal cavity confirmed the presence of non-typical radiopaque finding just below the stomach

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(**Figure 1**). The stomach extended beyond its normal location but it was not enlarged. The contrast media given a day previously was still kept in the stomach. Small intestines were raised near to the spine.

An ultrasound image revealed generally

enlarged spleen with multiple areas of hypo- and hyperechogenicity (**Figure 2**). This sonographic pattern was similar to the “coarse/lacy” appearance described in three other dogs with splenic infarction and necrosis due to torsion (6).

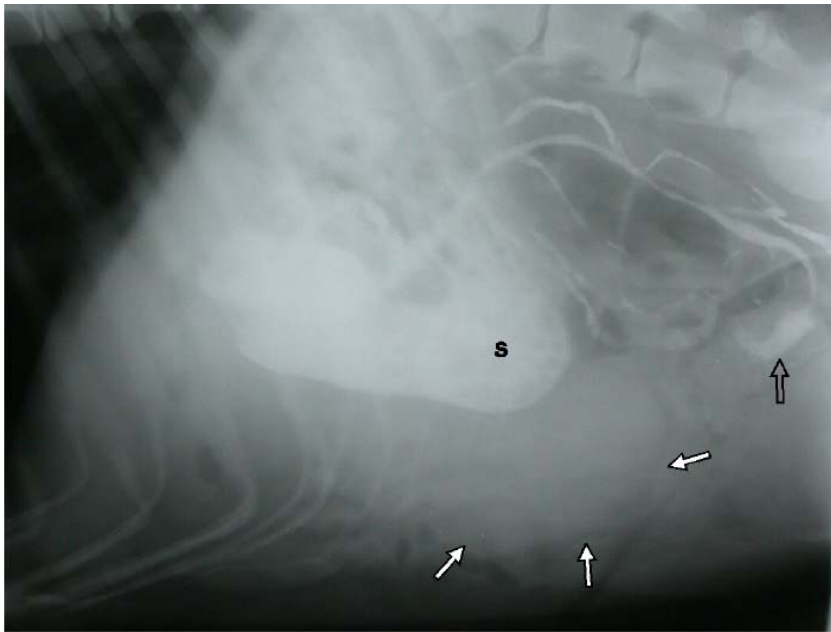


Figure 1. Lateral radiography of the abdominal cavity showing the presence of non-typical radiopaque finding just below the stomach (white full arrows). The stomach filled with contrast media (S) is extended beyond its normal location but is not enlarged. Small intestines having small amount of contrast media are raised near to the spine (empty arrow).



Figure 2. An ultrasound image revealed generally enlarged spleen with multiple areas of hypo- and hyperechogenicity.

On the basis of these data we determined a diagnosis of generalized splenomegaly and performed an exploratory laparotomy. The patient was premedicated with atropine sulphate (Sopharma - Bulgaria; $0.02\text{mg}\cdot\text{kg}^{-1}$ SC). Induction of anaesthesia was achieved using a mixture of diazepam (Sopharma -

Bulgaria; $0.5\text{mg}\cdot\text{kg}^{-1}$ IV) and ketamine (Ketaminol®, Intervet - Netherland, $10\text{mg}\cdot\text{kg}^{-1}$ IV) injected slowly 10 minutes after atropine. After endotracheal intubation anaesthesia was maintained with 2.0 – 2.5% halothane (Narcotan®, Leciva - Czech Republic) and oxygen flow of $2.5\text{–}3\text{l}\cdot\text{minute}^{-1}$.

The Fluotec Mark III halothane vaporiser and semi-closed re-breathing circuit were used.

Surgical approach to the abdominal cavity was made by combined cranial and caudal medial laparotomy. During operation we found an enormous spleen with purple colour filling up almost entire abdominal cavity (**Figure 3**). The enlarged spleen was carefully drawn out of the cavity and twisted vascular pedicle was detected (**Figure 4**).

After ligation of this vascular sheaf a surgical excision of the spleen was performed. The operative wound was closed routinely and a piece of the removed spleen was sent to pathohistological laboratory for examination. The histological findings revealed excessive blood congestion and nearly complete haemorrhagic infarction of the parenchyma. Thrombosis of the hilar veins was also confirmed.

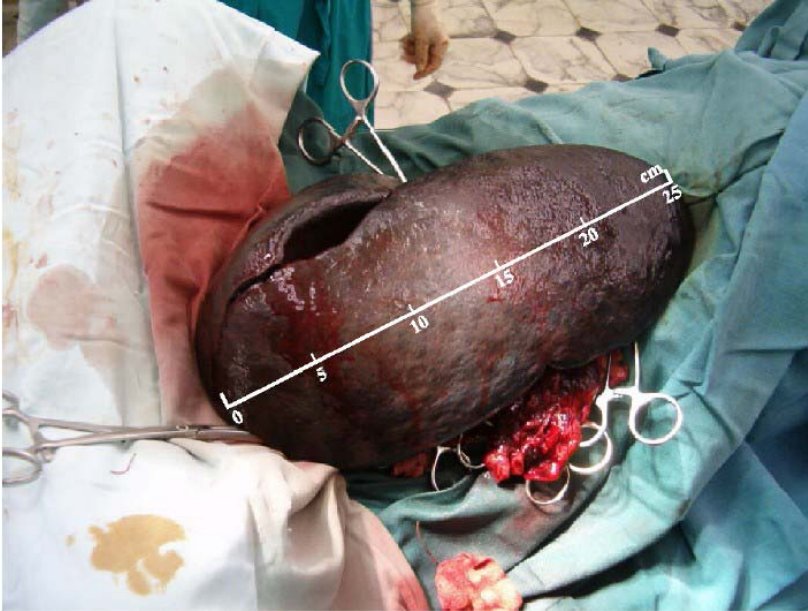


Figure 3. Intraoperative view of an enormous spleen with purple colour filling up almost entire abdominal cavity.



Figure 4. The twisted vascular pedicle (arrow) was detected on the hilar area of the enlarged spleen.

The clinical, image, intraoperative, and histopathologic findings were all consistent with splenic infarction secondary to torsion.

The dog recovered uneventfully with complete resolution of prior clinical signs on the check up 10 days postoperatively.

DISCUSSION

Wandering spleen is a term borrowed from human medicine and describes a foregoing state of splenic torsion. Torsion occurs when the spleen become hyper mobile (wandering) because of congenital absence or weakness of

one or more of the ligaments which hold the spleen in its normal position in the left cranial abdomen. Acquired wandering spleen may occur during adulthood due to injuries or laxity of the ligaments. Blunt abdominal trauma or surgery (7), splenomegaly or pregnancy (8) may lead to tearing or abnormal relaxation of splenic suspensory ligaments.

Primary torsion of the spleen as well as gastric dilatation-volvulus can occur in large, deep-chested breeds such as St. Bernard (9), Labrador, and German shepherd dogs (5). According to Neath et al. (10) Great Dane and German shepherd dog were found to be at increased risk for this condition.

Symptoms of splenic torsions vary depending on the degree of torsion. Mild to moderate torsion present chronic abdominal pain associated with splenic congestion whereas severe torsion is manifested as an acute abdomen caused by rapid torsion with infarction and mass effect on adjacent organs. Torsion can vary from 90° to 216°. Pain is a permanent sign and is due to capsular stretching and local peritonitis. Other typical clinical signs are nausea, vomiting, fever, and palpable abdominal mass that represents and enlarged spleen (11). When twisting of the splenic vessels occur acutely, symptoms may include also bleeding into abdomen (infarct), blood in the stools, bloody vomit, anaemia, thrombocytopenia, weakness and collapse (8, 12).

A generalized splenomegaly and caudal displacement of the spleen are found at radiography. In the study of Stickle (13) radiographic signs included suboptimal abdominal detail, displacement of other abdominal organs, loss of visualization of the body of the spleen in its normal position (in the left cranial portion of the abdomen) on the ventrodorsal radiographic view, abnormal splenic position and shape, splenomegaly and splenic gas on lateral view. Ultrasonography of the spleen is easily performed, sensitive but non-specific because many disorders have overlapping ultrasonographic patterns (14).

Other image techniques such as colour Doppler and CT scan are more precise (2, 11) but very expensive and inaccessible for the most veterinary clinics. Colour Doppler ultrasound shows decreased perfusion of the spleen with a patchy, heterogeneous echo texture that represents areas of infarction and congestion. CT findings include splenic enlargement, twisting of the pedicle having whorled appearance.

The current recommended treatment for splenic torsion associated with infarction is

splenectomy (4, 11). The spleen is not essential for life as its functions can be assumed by other organs, especially by the liver. Functions of the spleen include: cellular and humoral immunity; phagocytosis of bacteria and foreign particles; filtration of old or damaged cells; haematopoiesis when bone marrow is unable to meet demands for cells; blood reservoir. The spleen can sequester normal and abnormal cells including 10% of total RBC and platelets resulting in mild anaemia and thrombocytopenia when is removed.

The postoperative course usually passes uneventfully but some complications are described. Two dogs developed gastric dilatation-volvulus 2 and 17 months, after splenectomy for treatment of splenic torsion (15). This was due probably to stretch of the gastric ligaments by splenic displacement and torsion.

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