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A case study of splenic hemangiosarcoma in a bitch and its surgical management

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Abstract

A 9 year old female Doberman was brought to the Madras Veterinary College with a history of lethargy, dysphagia and abdominal distension. Physical and haemato-biochemical evaluations revealed anaemia and thrombocytopenia. Ultrasonography and radiologic examinations revealed the presence of multiple masses in the spleen. Whole Blood transfusion was performed with the blood collected from a donor dog brought by the dog to treat the anaemia and thrombocytopenia. Surgical resection of spleen was performed after blood transfusion. The masses were found to be Hemangiosarcoma during histopathological examination. The dog had an uneventful recovery from surgery. The dog is currently under chemotherapy with doxorubicin to prevent any further complications from hemangiosarcoma.

Keywords: dobermann, hemangiosarcoma, splenic tumor, total splenectomy

Introduction

The spleen has a diverse set of functions, including haematopoiesis, RBC filtration and storage, and immune surveillance. Despite its many functions, removal of the spleen is commonly performed in dogs and cats with rarely observed long-term adverse sequelae. Splenectomy is indicated in cases of splenic neoplasia, trauma, torsion, infiltrative diseases and occasionally as treatment for immune-mediated disorders. It is also commonly performed on an emergency basis for hemoabdomen of splenic origin.

Materials and Methods

A 9-year old female Doberman was brought to the Madras Veterinary College Teaching Hospital with a history of lethargy, dysphagia and abdominal pains. On physical examination, the dog had pale mucosa with petechial haemorrhages in the ventral abdomen. Haematological evaluation revealed that the dog had severe anaemia (Hb - 4.1g/dl) and thrombocytopenia (21,000/ μ l). Radiographic examination revealed an enlarged spleen and a normal thoracic radiograph. An ultrasonography was performed to assess the spleen which revealed the presence of multiple hyperechoic masses spread throughout the splenic parenchyma in an uneven fashion with rounded spleen borders. The dog was diagnosed to have a stage I splenic tumour since it was confined to the spleen and no evidence of metastasis was noticed in the thoracic radiograph.

Result and Discussion

A total splenectomy was planned as there were multiple masses found diffuse throughout the spleen. The haematological values were corrected by whole blood transfusion from a donor in pre-operatively (230ml) and during intra-operatively (120ml). Cefotaxime (20mg/kg intravenously) was administered 1 hour prior to surgery as a pre-operative antibiotic. Anaesthesia was induced with propofol (3mg/kg intravenously) after pre-medicating the dog with butorphanol (0.2mg/kg intravenously) and diazepam (0.25mg/kg intravenously). Anaesthesia was maintained with Isoflurane at 2% concentration in rebreathing circuit with 100% oxygen supplementation.

A linear skin incision was made on the ventral abdomen on the midline 5cm caudal to the xiphoid and the incision was extended for about 10cm. The subcutaneous tissue was dissected and a stab incision was made on the linea alba and the incision was extended for about 9cms. Sero-sanguinous fluid was noticed in the peritoneal cavity. Spleen was identified and exteriorised without damaging any abdominal viscera. The splenic arteries from the celiac artery was ligated and resected using a vessel sealant device at two-points without damaging

the pancreatic artery branching from the splenic artery and the left gastroepiploic artery. The Short gastric arteries at the gastrosplenic ligament were ligated and resected by the same method close to the spleen as to avoid damage to the gastric blood supply. Then the spleen was resected. Peritoneal cavity was examined for any haemorrhage and then the linea alba and subcutaneous tissues were closed with PGA 1 in a continuous fashion and the skin was closed with polyamide 2-0 in a cross-mattress pattern. The spleen weighed around 2 kg with the mass. The animal was weaned off isoflurane and she was monitored overnight and buprenorphine was administered at 0.01mg/kg intramuscularly every 4 hours after surgery until 12 hours. The dog returned to its comfortable self in 24hours. The dog was put oral cefpodoxime (10mg/kg) for 7 days and oral Tramadol (3mg/kg) for 3 days. The sutures were removed on day 12 with an uneventful recovery.

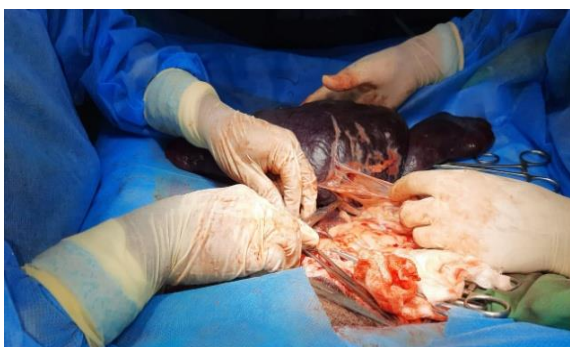


Fig 1: Surgical resection of the spleen with hemangiosarcoma



Fig 2: Resected spleen weighing around 2kg

Histopathological examination of the mass revealed a hemangiosarcoma in the splenic parenchyma. The dog is started on a doxorubicin chemotherapeutic protocol stretched for a period of 10 weeks with a 2week interval between each dose. The dog has not had any metastasis postoperatively for a month.

Wood *et al.* (1998) [5] has stated that Hemangiosarcoma was a malignant neoplasm originating from the vascular endothelium that is characterized by widespread metastases and poor survival rates and that it might arise from any site in the body, but the spleen is affected most commonly in dogs. Splenic hemangiosarcoma was one of the most common and rapidly fatal cancers in dogs. Hammond and Pesillo-Crosby (2008) [2] reported that the dogs with splenic hemangiosarcomas have low platelet concentrations than the dogs with other splenic masses and also stated that no other markers were useful in differentiating dogs with hemangiosarcoma which was similar to the presented case. The tumor often ruptures, resulting in clinical signs referable to acute hemoabdomen, and many dogs have macroscopic

metastatic disease in the liver and other sites at the time of initial evaluation (Wendelburg *et al.* 2015) [4]. Stage I splenic hemangiosarcomas are confined to the spleen with no evidence of metastases, while Stage II tumors may have ruptured and may or may not have regional lymph-node involvement (Wood *et al.* 1998) [5]. This staging was used to determine the presented case as Stage I hemangiosarcoma.

Collard, Nadeau and Carmel (2010) [1] opined that it was better to perform a splenectomy through laprotomy rather than a laproscopic splenectomy for cases involving large hemangiosarcomas which has a potential complication of uncontrollable haemorrhage and hemabdomen both pre and intraoperatively which made the decision to perform a laprotomy to the presented case easier. Mallinckrodt MJ and Gottfried SD (2011) [3] have reported that the mass-to-splenic volume ratio might be useful in differentiating between the hemangiosarcomas and other benign splenic masses explained by the significantly higher mean mass-to-splenic volume ratio in the benign splenic tumours which is in agreed to the presented case.

Conclusion

Prompt presentation, early diagnosis, surgical intervention and chemotherapy favours good prognosis for splenic hemangiosarcoma in dogs.

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