SPONTANEOUS SPLENIC HEMANGIOSARCOMA IN A GUINEA PIG (*CAVIA PORCELLUS*)

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Abstract

An 18-month-old female guinea pig (*Cavia porcellus*) was presented with a 2-week history of inappetance. A 4 cm abdominal mass was palpated on physical examination. Radiographs were not able to identify the origin of the mass and an exploratory laparotomy was performed. The mass was found to be splenic in origin, occupying approximately 80% of the organ, and the spleen was removed. Histological examination and immunohistochemistry confirmed the mass to be consistent with a splenic hemangiosarcoma. Further examination of the abdominal cavity and thoracic radiographs of the guinea pig revealed no evidence of metastatic disease. Postsurgical survival was 17 months, with no radiographic evidence of tumor recurrence or metastases during that time. Spontaneous splenic hemangiosarcoma is rare in this species, but should be considered as a differential for an abdominal mass. Copyright 2016 Published by Elsevier Inc.

Key words: spleen; splenic; hemangiosarcoma; neoplasia; guinea pig; immunohistochemistry

An 18-month-old female guinea pig presented for inappetance and intermittent sneezing of approximately 2 weeks duration. The owners had obtained the pet 1 month earlier from an acquaintance, and no prior history was known. On physical examination, the guinea pig was bright, alert, responsive, and in good body condition. There was mild skin tenting, and the mucous membranes were pink, slightly tacky and had a capillary refill time of 1 second. The skin tenting and tacky mucous membranes were attributed to mild dehydration. Thoracic auscultation revealed no significant abnormalities, and no nasal discharge was noted. Oral examination revealed no evidence of malocclusion. Abdominal palpation revealed an approximately 4-cm diameter spherical moveable mass in the left cranial quadrant. No other significant abnormal findings were apparent on physical examination. Initial differentials for the abdominal mass included ovarian cyst, neoplasia, or renomegaly due to hydronephrosis or neoplasia.

The diagnostic workup included a complete blood profile, serum biochemistries, urinalysis, and full-body radiographs. The complete blood profile and urinalysis revealed no abnormalities. Serum biochemistry showed a mild hyperproteinemia (66.3 g/L, reference range:[1] 46 to 65 g/L) and hyperalbuminemia (36.1 g/L, reference range:[1] 21 to 33 g/L), consistent with hemoconcentration secondary to mild dehydration. There was mild elevation of aspartate

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1557-5063/16/2101-$30.00
http://dx.doi.org/10.1053/j.jepm.2016.03.005

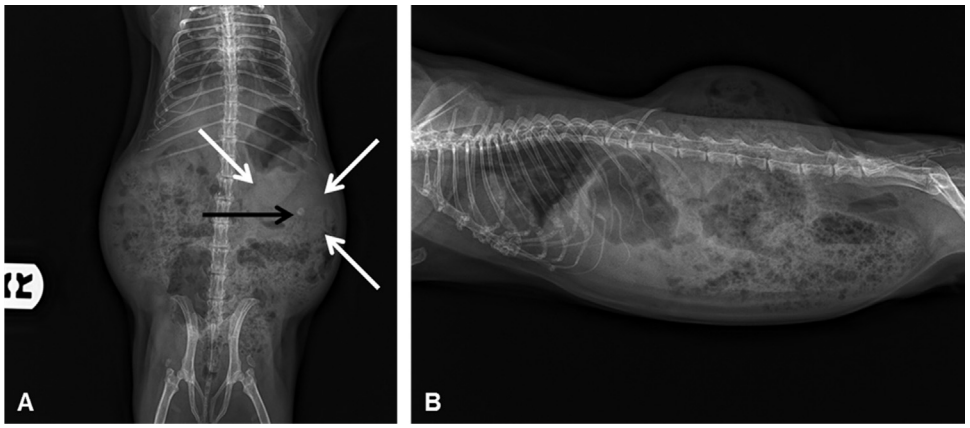

FIGURE 1. (A) Ventrodorsal full-body radiographic image of a guinea pig with splenic hemangiosarcoma. There is a 2 × 3 cm ovoid mass within the left cranial abdomen (white arrows). The mass contains a 0.6 cm mineralized core (black arrow). (B) Right lateral full-body radiographic image of a guinaea pig with splenic hemangiosarcoma. Abdominal detail is obscured by gastrointestinal contents. Thoracic fields are unremarkable.

aminotransferase (79 U/L, reference range:[1] 10 to 45 U/L), likely reflective of the anorexia with possible hepatic lipidosis, and mild hyperglycemia (7.3 mmol/L, reference range:[1] 3.3 to 6.9 mmol/L), possibly attributable to stress. Radiographs images revealed a 2 × 3 cm oval mass in the left cranial abdominal quadrant at the level of the vertebra and within the center of the mass, there were areas of mineralization (Fig. 1). Abdominal detail was obscured by gastrointestinal contents, and it was not possible to ascertain the origin of the mass. There were no abnormalities in the thorax.

An exploratory laparotomy was performed to further identify the source and to remove the mass. The guinea pig was sedated with butorphanol (Torbugesic, Zoetis, Canada Incorporated; 0.3 mg/kg[1]) and induced with mask-delivered isoflurane following a 5-minute period of preoxygenation. An intravenous catheter was placed using the cephalic vein and the guinea pig was maintained on isoflurane. Crystalloid fluids (Plasmalyte A, Baxter, Mississauga, Ontario, Canada) were delivered at a surgical rate of 10 mL/hour throughout the surgery. Laparotomy was performed using a ventral midline approach. The mass originated in the spleen, was approximately 2 cm × 3 cm in size, had an irregular surface, and had 3 firm extracapsular nodules. A total splenectomy was performed with minimal surgical blood loss, and recovery was uneventful. Postoperatively, buprenorphine (Vetergesic multidose, Champion Animal Health; 0.03 mg/kg[1]) meloxicam (Metacam, Zoetis Canada Incorporated, Boehringer Ingelheim, St Joseph, MO 0.2 mg/kg[1]) were given subcutaneously for purposespain relief.

On cut surface, the mass consisted of alternating areas of pale tan and dark clotted blood. A portion of the resected spleen was fixed in 10% neutral-buffered formalin and submitted to the Animal Health Laboratory, University of Guelph, for histologic evaluation. Paraffin-embedded, 4-μm sections were stained with hematoxylin and eosin. Immunohistochemistry was also performed by the Animal Health Laboratory, University of Guelph.

Histologically, most of the splenic tissue provided for evaluation was composed of variably sized, distended blood-filled spaces lined by a single layer of slender elongate endothelial cells bearing widely separated, slim elongate nuclei, occasional large foci of acute hemorrhage, numerous small scattered foci of immature hematopoietic cells, and small numbers of hemosiderin-laden macrophages. Multiple poorly circumscribed supracapsular and subcapsular nodules, growing by expansion and gently compressing the surrounding parenchyma, were composed of narrow blood-filled channels lined by endothelial cells with enlarged, moderately anisokaryotic, ovoid to elliptical hyperchromatic nuclei that were rowing, piling, and rarely exhibiting mitoses (Fig. 2). These vascular spaces were separated by bands of stromal cells of variable width and increased numbers of smooth muscle trabeculae. Multiple small foci of immature hematopoietic cells and hemosiderin-laden macrophages, both singly and in small clusters, were scattered throughout, both within and between the vascular channels. Immunostaining for von Willebrand factor (Factor VIII-related antigen) was evident in the cytoplasm of most of the neoplastic spindle cells, consistent with