Hepatocellular Carcinoma in Dog – Case Report


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Abstract

A 12-year-old mixed dog, male, weighing 11 kg was referred for surgery with ultrasound exams suggesting hepatic neoplasia and hemoperitoneum. The identification of the affected liver lobes was performed by computed tomography, leading the patient to go through hepatic lobectomy of two liver lobes. This patient had a 12-month survival exceeding expectations for this neoplasm that is around 4 months.

Keywords: Dog, liver, cancer, computed tomography

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HEPATOCELLULAR CARCINOMA IN DOG ...

Introduction

Primary hepatobiliary tumors are rare in dogs and represent 0.6% of all canine tumors (Kawarai et al., 2006). Hepatocellular carcinoma (HCC) is the most common hepatic neoplasm in dogs corresponding to more than 50% of all malignant tumors followed by the biliary carcinoma (Argyle and Saba, 2008, Martin et al., 2007). It is observed in three morphologic subtypes, being the massive (the most common form of hepatocellular carcinoma representing 53% to 84%) defined as a solitary mass usually large, confined to one of the liver lobes (Liptak et al., 2004). The nodular form is characterized by multiple nodules in the liver lobes and the diffuse form is defined as widespread multifocal nodules in all liver lobes (Argyle and Saba, 2008). The HCC are highly malignant and invasive. Animal with this tumor can present at the physical examination a cranial large abdominal mass or an intensive hepatomegaly. Usually the clinical signs are nonspecifics and generally only appear in the most advanced stages of liver disease (Kawarai et al., 2006, Withrow and Vail, 2007). The signs most commonly observed are anorexia, weight loss, polydipsia, polyuria, lethargy, vomiting and abdominal distension (Argyle and Saba, 2008). The performance of multiple abdominocenteses to obtain material for cytological examination may be necessary due to the difficulty of shedding liver cells. Other diagnosis methods are ultrasonography, laparoscopy and liver biopsy as the definitive diagnosis, being the material obtained sent for histopathological evaluation (Withrow and Vail, 2007). The best treatment for hepatocellular carcinoma is the surgical resection (Argyle and Saba, 2008). Systemic chemotherapy has been frustrating in human beings and poorly evaluated in animals, although there is one report of complete remission in one dog after treatment with mitoxantrona (Martin et al., 2007). Little information exists about the prognosis, however, a study reports that the average survival time was longer than 1400 days in patients undergoing liver lobectomy and 270 days for dogs with HCC treated in a conservative way (Liptak et al., 2004).

Case Report

A canine mixed breed, male, with twelve years of age, weighing 11kg was admitted at the veterinary hospital. The dog was referred with ultrasound diagnosis suggestive of hepatic tumor; it was not defined in which or how many lobes were involved, besides hemoperitoneum. The patient presented, according to its owner, a clinical course of a distended and bulging abdomen with a decrease in its activities for three and a half months. During the staging of the tumor, blood tests (hematologic and serum biochemical) and chest X-ray showed no changes, besides that, it was not possible to detect the cancer with the abdominocentesis. An abdominal CT scan was then performed which showed the following report: presence of a large heterogeneous formation, with irregular and well defined borders with heterogeneous capitation and presence of no capitations areas with characteristics of necrosis, originating in the left lateral lobe, measuring 11,0 x 9,0 x 15,1 cm, involving the whole left mesogastric region and moving laterally to the right the portal vein and the pancreas, and dorsally to the spleen head. It was observed hypotenuating image with capitation predominantly at the edges on the cranial face of the left medial liver lobe, measuring 2,2 x 1,9 x 1,5 cm, suggesting secondary implantation. Remaining liver lobes showed homogeneous parenchyma and capitation. The other organs did not show changes. Based on the results of this report the patient underwent a celiotomy for lobectomy of the lateral and medial left lobes. Preoperative intravenous antibiotic therapy was performed with metronidazole (50mg/kg) and eftriaxone sodium (20 mg/kg), and preemptive analgesia with meloxicam (0,2mg/kg). After anesthetic induction, epidural anesthesia in the lumbosacral region and maintenance with isoflurane, the cavity was accessed by pre-retro umbilical median approach. It was conducted first the exposure of the left lateral lobe, which was presenting fractures and bleeding areas, so we proceeded to ligation with polyglactin 910 n.1-0, using simple suture and knot triple. After that, the lobe was removed and its weight was 1.2kg. Posteriorly, the left medial hepatic lobe was
also removed with the same pattern of wire and suture. After resection of two liver lobes, the abdomen was washed copiously with warmed 0.9% saline. The closure of abdominal wall and subcutaneous tissue was realized in a sultan pattern with absorbable sutures and the skin with nonabsorbable sutures in a sultan pattern. On the postoperative period was carried out curative with topical antiseptic on the wound and use of compression bandage in the abdomen. A pain medication (tramadol 2mg/kg/TID) and anti-inflammatory (meloxicam 0.1mg/kg/SID) were administered for five days and antibiotic therapy with cephalosporin and metronidazole was performed for ten days. Stitches were removed fifteen days postoperatively.

**Results and Discussion**

The nodular form of hepatocellular carcinoma is characterized by multiple nodules in the liver lobes (Withrow and Vail, 2007). In the patient described in this report the tumors presented a nodular form on the left lateral lobe with multiple nodules and parenchymal rupture which caused bleeding in the abdominal cavity; the left medial lobe did not present macroscopic lesions in the liver parenchyma. The patient had been evaluated monthly with physical examination, abdominal ultrasound, chest’s radiograph and blood tests. Until the tenth month after the surgery it was not observed any alteration in the exams results. During the reassessment of the 11th month after surgery the patient had increased abdominal volume and during palpitation, was possible to detect the presence of a firm mass in the right hypochondrial region. Radiographic examination of the chest was normal, although the level of liver enzymes on blood was altered and the ultrasound exam revealed an increment in the size of two liver lobes. Because of the possibility of a new surgery to remove these two lobes affected, a CT scan was requested. HCC are highly malignant and invasive tumors (Martin et al., 2007), however, this patient showed recurrence of the tumor on the four remaining liver lobes, but didn’t show evidences of metastasis in other organs. The new CT scan revealed the presence of four large heterogeneous formations, with irregular and well-defined borders with heterogeneous capitation and presence of no captating areas with characteristics of necrosis, being one on the topography of the papillary process of the right lateral lobe, measuring 8.6 x 7.2 x 6.4 cm, embracing the entire left epigastric region; another one on the right lateral lobe, measuring 3.8 x 5.5 x 4.4 cm; another one in the caudate process of the right lateral lobe, measuring 8.7 x 10.4 x 7.1 cm, with direct contact to the right kidney; and the last one in the quadrate lobe, measuring 5.8 x 4.0 x 5.6 cm. The caudal vena cava and portal vein branches were preserved. The images were suggestive of secondary implantation of hepatocellular carcinoma. The other organs showed no changes, contrasting Martin et al. (2007) who report that pulmonary metastases are frequently present. Because of this report it was not possible to realize another surgical procedure for resection of the affected lobes, so the patient was accompanied on maintaining its quality of life with regard to the physiological function of urinating and defecating, keeping its appetite and avoiding pain by administration of analgesics and anti-inflammatory. The patient died 540 days after the first diagnosis of cancer. Little information exists about the prognosis, however, on study by Liptak et al., 2004, reports that the median survival time for surgically treated animals is five times higher than in those treated conservatively. We believe that surgical treatment should always be performed in patients with tumors located in up to two thirds of the liver lobes.

**Conclusion**

We conclude that, as preconized by Martin et al. (2007), even though palliative, the surgical treatment for hepatocellular carcinoma in dogs can increase survival time, and give a higher quality of life for the patient.

**References**


Fig. 1: Canine mixed breeds male with 12 years of age presenting with distended and round abdomen with ultrasound diagnosis of suspected liver tumor. A) Patient in station with twelve years and 11 kg. B) Paciente elevado pelos membros torácicos observa o abdome globoso. C e D) Chest radiographies in a ventro dorsal and lateral positions showing no alterations. E e F) Computed tomography of the abdomen and sagittal cross-sectional showing the left lateral liver lobation with several cavities. G e H) Exposure and resection of the left lateral hepatic lobe. I e J) Exposure of the left medial hepatic lobe and it’s resection. K) Banding in the abdomen during the postoperative period. L) Appearance of wound healing at the time when surgical stitches were removed, 15 days postoperatively. M) CT performed 11 months after the initial surgical procedure and, N) Evaluation of the patient 11 months postsurgical, view of the abdomen.