Case Report

HAEMANGIOSARCOMA IN A DOG

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ABSTRACT

A clinical case of haemangiosarcoma of the spleen and liver in a male mixed breed dog, of age 10 years and 8 months, weighing 8 kg, is presented. The clinical signs were general and non-characteristic. Initially, the disease was diagnosed by ultrasonography and blood laboratory investigations. Ultimately, the type of the growth was determined by a histological examination of a spleen specimen. The liver metastases were evidenced by ultrasound-guided fine-needle aspiration biopsy. The prognosis was poor.

Key words: Haemangiosarcoma, dogs, abdominal ultrasonography, haematology.

INTRODUCTION

Haemangiosarcoma is a malignant tumour originating from the endothelium of blood vessels. It is more commonly encountered in dogs over 8 years old and from the large breeds (1). The tumour was observed in German Shepherds, Golden Retriever and Labradors (2, 3, 4). Haemangiosarcoma is rarely seen in cats and other domestic animal species (5, 6). The visceral form is most commonly encountered in the spleen and the liver, but was also observed in lungs, kidneys, ureters, mesenterium etc. (7, 8, 9). According to Withrow at al, 2001 and Day at al., 1995 (1, 10) this is the most frequent neoplasm of the spleen in dogs and accounts for 51-66% of all cases of spleen neoplasm. The dermal form is more common in light-haired breeds: Beagle, Bloodhound, English Pointer, Dalmatian etc. (11). It usually develops on the ventral abdominal wall and the region of the prepuce where the hairs are few. Unlike the visceral form, dermal haemangiosarcoma metastasizes more rarely (12). The cardiac form affects the atria and results in pericardial effusion and cardiac tamponade (1).

Haemangiosarcoma is an aggressive, highly malignant tumour and, usually, metastases are detected within 6 months after diagnosis (1). The commonest metastatic sites are the brain, the lungs, the liver, the heart, skeletal muscles and bones.

CLINICAL CASE

A clinical case of haemangiosarcoma in a male dog, aged 10 years and 8 months, weighing 8 kg, owned by a private owner and referred to the Clinic of Internal Diseases is presented here. The dog was referred to the Clinic of Internal Diseases on July 08, 2005. According to the history data, it had a decreased appetite from 6-7 days and experienced weight loss. The physical examination revealed a general lethargy, a slight kyphosis of the spine and increased sensitivity to abdominal palpation. The rectal body temperature was within the reference range, the respiratory rate: 48 min⁻¹, the heart rate 138 min⁻¹. The haematological analysis showed Hb 106 g/L, Er 5.01 T/L, Hct 31.1%, Leu 52.2 G/L, Eo 2%, Mm 2%, St 5%, Sg 81%, L 10%, whereas the blood biochemical analysis: ALAT 37.2 U/L, ΑSАТ 42.6 U/L, creatinine 61.0 µmol/L, urea 6.8 mmol/L, alkaline phosphatase (AP) 1140 U/L. Urine analysis showed рН 6, protein (++), glucose (–), bilirubin (–), urobilinogen (–), ketone bodies (–), blood (–), density 1.020. Urine sediment consisted of single erythrocytes and leukocytes and single kidney cells. The
ultrasonography revealed a general enlargement of the spleen and within, a
distinct formation with a diameter of 8 cm. Its
structure was heterogeneous and included
hyperechoic, hypoechoic and anechoic areas
(Figure 1). The laparotomy, performed on
July 12 2005, revealed an enlarged spleen
with an irregular surface (Figure 2) and a
splenectomy was necessitated. The
histological study of the spleen showed a
neoplastic growth. Neoplastic cells varied by
both shape and size. Irregular mitotic figures
were observed. The cell’s nuclei were
pleomorphic and hyperchromatic and the
cytoplasm – with indistinct margins. The
tumour stroma was poor: necrotic areas with
various shapes and sizes were seen. In some
areas, there were blood vessel-like structures,
filled with blood (Figure 3). The diagnosis of
splenic haemangiosarcoma was made on the
basis of clinical, laboratory, ultrasonographic,
gross and histological examinations. A
cyclophosphamide therapy was prescribed
(Cytoxan®, fl. â 100 mg), intravenously, at a
dose of 100 mg/m² body surface area, two
times a week for 5 weeks.

On November 18, 2005 the dog was referred
to the clinic for the third time because further
deterioration in its condition had occurred.
The physical examination revealed pale
mucosae, rectal body temperature within the
reference range, but the respiratory and heart
rates were accelerated. The haematological
analysis showed the following parameters: Hb
48 g/L, Er 3.45 T/L, Hct 25.5 %, Leu >100.0
G/L, St 15%, Sg 65%, L 20%, ALAT 94.0
U/L, ASAT 110.3 U/L, creatinine 118.4
µmol/L, urea 7.6 mmol/L, AP 762 U/L, and
urine analysis: pH 6, protein (+), glucose (–),
bilirubin (–), urobilinogen (–), ketone bodies
(–), blood (–), density 1.020. Urine sediment
exhibited single erythrocytes, 15 leukocytes,
single urinary bladder and kidney cells.

The ultrasonography revealed an enlarged
liver with focally increased echogenicity. In
the right hepatic lobe, a well differentiated
formation with diameter of 4.2 cm, with
hypoechoic structure and anechoic areas
within was visualized (Figure 4). As the
presence of a metastasis was hypothesized,
ultrasonographic-guided fine-needle
aspiration biopsy was performed. The cell
material was fixed with methanol and the
smears were stained with Giemsa’s stain.
Cytologically, the findings contained a large
amount of blood. The neoplastic cells were
with a various shape and size; their shape
varied from fusiform to squamous. The
cytoplasm was basophilic, with indistinct
cytoplasmic borders; in some cells, small
vacuoles were observed (Figure 5). The cell’s
nuclei were oval, with coarsely clumped
chromatin and prominent nucleoli. The
nuclear/cytoplasmic ratio was in favour of the
nucleus.

As a result of performed examinations
(physical, laboratory, ultrasonography and
cytology), the diagnosis of liver
haemangiosarcoma was established. With
regard to the poor prognosis, euthanasia of the dog was recommended. The owner however preferred to postpone the euthanasia. That is why a supportive therapy with hepatoprotectors, electrolyte solutions, vitamins and analgesics was prescribed.

![Figure 4. Haemangiosarcoma in the liver - ultrasonographic finding.](image)

**Figure 4.** Haemangiosarcoma in the liver - ultrasonographic finding.

![Figure 5. Cytological finding. Anisokaryosis, anisocytosis. The small vacuoles within the cytoplasm of neoplastic cells are well visible. Giemsa staining.](image)

**Figure 5.** Cytological finding. Anisokaryosis, anisocytosis. The small vacuoles within the cytoplasm of neoplastic cells are well visible. Giemsa staining.

**DISCUSSION**

When the haemangiosarcoma is localized in internal organs, the early symptoms are general and non-specific. They largely depend on the size and localization of tumour growths, the presence of metastases and the development of secondary complications. Most owners seek help when the state of the animal aggravates. The commonest complaints are lack of appetite, general weakness and weight loss (1, 2, 4). With progression of the disease, a high-degree anaemia, haemorrhages on mucosae, development of DIC syndrome, collapse, cardiac arrhythmia, abdominal effusion etc. could be observed (1, 4, 11). Initially we could not make a correct diagnosis according to observed arexia, depression, weight loss, accelerated heart rate and tachypnea. Laboratory results (low haemoglobin and erythrocyte counts, hyperleukocytosis, increased alkaline phosphatase) corresponded to neoplastic changes in internal organs observed by others (1, 4, 13). This fact caused us to perform an ultrasonography and thus, to evidence a splenic neoplasm (Fig. 1). The splenectomy done after three days and the subsequent gross and histological examinations revealed the type of the tumour – a 2nd stage haemangiosarcoma. The prognosis was poor. The critical period for performing splenectomy is 20-60 days after identifying the tumour growth. The average life span in dogs with splenic haemangiosarcoma is up to 3 months and only 10% survived up to 1 year or longer (1, 2, 3, 11). Chemotherapy could prevent the distribution of the tumour through control of early metastases. Cyclophosphamide, applied either independently or in combination with other anticancer drugs, is the most commonly used preparation in veterinary practice (14). The combination of splenectomy with chemotherapy increases the average survival time with 140 to 202 days (1, 15).

Unfortunately, in our case the therapy was ineffective and 4 months after the splenectomy, the dog visited the clinic for the third time. The clinical signs were similar to those manifested during the second visit, but the blood laboratory analysis showed a negative tendency (*Table 1*).

The performed abdominal ultrasonography confirmed the suspected secondary neoplastic growth (*Figure 4*). Because of the high aggressivity and malignancy of this tumour type, a similar outcome was expected by us. The localization in the liver explained the haematological changes and alterations in organ-specific enzymes (ASAT and ALAT). The increased creatinine and urea concentrations are reflecting the enhanced cellular degradation.

In summary, it could be concluded that the development of new medications and diagnostic tests would assist in the control of these diseases. The early diagnostics is essential for the success of the treatment and the efforts of veterinarians should be aimed at in this direction. This would result in increased survival time and better quality of life in patients with haemangiosarcoma.
Table 1. Blood analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Normal range</th>
<th>First visit 08.07.2005</th>
<th>Second visit 18.11.2005</th>
</tr>
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<tbody>
<tr>
<td>Hb g/L</td>
<td>120-180</td>
<td>106</td>
<td>48</td>
</tr>
<tr>
<td>Er T/L</td>
<td>5.5-8.5</td>
<td>5.01</td>
<td>3.45</td>
</tr>
<tr>
<td>Hct %</td>
<td>37-55</td>
<td>31.1</td>
<td>25.5</td>
</tr>
<tr>
<td>Leu G/L</td>
<td>6-17</td>
<td>52.2</td>
<td>&gt;100.0</td>
</tr>
<tr>
<td>ALAT U/L</td>
<td>10-27</td>
<td>37.2</td>
<td>94.0</td>
</tr>
<tr>
<td>ASAT U/L</td>
<td>10-27</td>
<td>42.6</td>
<td>110.3</td>
</tr>
<tr>
<td>Creatinine</td>
<td>&lt;106</td>
<td>61.0</td>
<td>118.4</td>
</tr>
<tr>
<td>Urea mmol/L</td>
<td>1.66-7.4</td>
<td>6.8</td>
<td>7.6</td>
</tr>
<tr>
<td>AP U/L</td>
<td>10-94</td>
<td>1140</td>
<td>762</td>
</tr>
<tr>
<td>Eo %</td>
<td>0-7</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Mm %</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>St %</td>
<td>0-3</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Sg %</td>
<td>50-70</td>
<td>81</td>
<td>65</td>
</tr>
<tr>
<td>L %</td>
<td>18-40</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Mo %.</td>
<td>1-6</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

REFERENCES


