



VETERINARY ONCOLOGY CONSULTANTS

helping veterinarians treat pets with cancer

Consultation Report: **Puppy Brown 8 month old FS Labrador**
Date: **November 28, 2005**
Veterinarian name and practice: **Dr Tony Moore, Someplace Vet Hospital**
Diagnosis: **Renal nephroblastoma**

Summary of case history and bloodwork

Puppy was presented for abdominal distention, but no other abnormalities. She has a reduced body weight but is eating well and active. CBC results show a mild neutrophilia, serum chemistry profile shows a mild decrease in blood glucose, and urinalysis shows microscopic haematuria. A large abdominal mass was palpated, that on ultrasonography was found to involve the left kidney. Surgery to remove the renal mass was performed, and the histopathologic diagnosis was nephroblastoma. There was local invasion of the perirenal tissues, and resection of the mass was incomplete. It is now 3 weeks since surgery and she is feeling well.

Further staging required

- Prior to starting further therapy, and as a baseline for future monitoring, the abdominal organs and lymph nodes should be re-evaluated by abdominal ultrasonography.
- Although this tumour is reported to only uncommonly metastasize to the lungs, in view of the small number cases in the literature, it would be prudent to examine three-view thoracic radiographs.
- CBC including platelet count, serum chemistry, and urinalysis should be re-evaluated before proceeding with chemotherapy, as she has had quite an eventful 3 weeks since the previous labwork. Because some chemotherapy agents are excreted renally, or have potential for causing renal disease, a baseline would be helpful.
- Although the histopathology report for Puppy does not describe any poorly differentiated (anaplastic) component, review by the pathologist may be worthwhile to help determine the prognosis.

Tumour behaviour and important prognostic factors

Nephroblastoma is rare in dogs. This kidney tumour is unilateral and often very large. Nephroblastoma is a congenital tumour, but there is no evidence that it is hereditary, although most reported cases have occurred in purebred dogs. The tumour is mostly described in young male dogs with a mean age of 11 months, although it may

occur in old dogs. Some dogs are presented for haematuria, but most owners observe abdominal swelling. Hypertrophic osteopathy and polycythemia due to nephroblastoma have been reported.

Nephroblastoma can be highly invasive locally and often attains a large size (up to 25cm diameter). Postoperative metastasis is common even in dogs that appear to be free of disease at initial diagnosis. Metastases are primarily to the liver, mesentery, and lungs; however, the contralateral kidney, adrenal gland, thyroid, urinary bladder, and bone can be affected.

The histopathologic appearance of nephroblastoma appears to correlate with metastatic behaviour in people, and there is some evidence that this is also true in dogs. Clinical staging as outlined below also appears to predict survival in the small number of dogs reported.

Stage	Description
1	Tumour confined to kidney and resected completely
2	Tumour not confined to kidney but resected completely
3	Tumour extends to abdomen and not resected completely
4	Metastatic disease
5	Bilateral involvement

Favourable Histology: No anaplasia

Unfavourable Histology: Anaplastic or sarcomatous component

Prognosis for the patient with no further treatment

Based on the information provided, and pending thoracic radiographs, Puppy has a stage 3 nephroblastoma of favourable histology. She has residual tumour tissue after surgery. With no further treatment, metastasis is likely to occur in about 50% of dogs, and the median time to metastasis in the literature is 3 months. This is based on small numbers of dogs in often older literature. One dog with stage 2 nephroblastoma and favourable histology developed metastases in 6 weeks.

Treatment options:

Preferred treatment option

Primary treatment modality

Surgery should be the treatment of choice for nephroblastoma, although very little survival data is not available for dogs treated in this way alone. Since Puppy has a stage 3 (incompletely excised) tumour additional therapy is advised.

Adjunctive treatment

Chemotherapy should be considered for incompletely resected or metastatic tumours starting soon after surgery. Chemotherapy is most likely to be effective in the adjuvant setting, rather than waiting until metastatic disease is present. Doxorubicin, actinomycin-D and vincristine are the recommended drugs. We have attached a suggested protocol.

Chemotherapy, however, is still under investigation. Reports of dogs with stage 2 to 3 tumours of both favourable and unfavourable histology received the above drugs, and one dog was treated with radiation therapy postoperatively. Metastases were seen in these dogs between 4 and 8 months after surgery. A dog with a stage 1 tumour of unfavourable histology was treated with chemotherapy as above, and was still alive 2 years after surgery.

Radiation therapy may also be a useful adjunct to incomplete surgery for nephroblastoma in dogs; however to establish good tumour control, multiple doses given to a high total dosage are needed. The greatest risk would be renal damage to the contralateral kidney, and localization of the beam for repeated treatment would be difficult. If radiation therapy is available in your area, consultation with a radiation oncologist is advised.

Supportive treatment

Supportive care may not be needed at present, but in the future, could include appropriate analgesia, anti-inflammatories and appetite stimulants. Antiemetics may be helpful in controlling chemotherapy-induced nausea if it occurs.

Less costly treatment alternative

Single agent therapy with one of the chemotherapeutics above may result in improvement in survival time, but has not been evaluated.

Palliative treatment alternative

Prednisolone may provide some palliation in the end stage of disease.

Additional comments

In summary, the ideal course of treatment for Puppy would be: as aggressive a surgery as possible (which has been performed), followed by a chemotherapeutic course consisting of doxorubicin, actinomycin-D and vincristine. Radiation therapy may help in control of local disease, but could be difficult given the location of this tumour.

Consultant: Antony Moore BVSc, MVSc, Diplomate ACVIM (Oncology)

Attachments:

- Chemotherapy protocol
- Abstracts of pertinent literature
- Information on chemotherapy drug handling and administration
- Client information on tumour type
- Client information on treatment type and protocol