

# NEWS FROM THE WORLD OF ONCOLOGY

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## CANINE MULTIPLE MYELOMA

Multiple myeloma (MM) is a round cell tumour. It is a rare tumour accounting for less than 1% of all tumours in companion animals comprising 8% of hematopoietic tumours. MM is a systemic form of a plasma cell tumour of B-cell lineage. B-cells essentially are responsible for producing antibodies, which appear as the globulin fraction of the blood protein profile. In MM there is a systemic clonal expansion of a single plasma cell. Though rare MM can be the systemic progression of a solitary plasma cell tumour. MM is a disease of middle age with the average of onset being between 8 and 9 years. There has been one report of a German Shepherd breed disposition. No age association is reported.



In MM the malignant plasma cells over produce a single type of immunoglobulin, usually IgG or IgA. If IgM is overproduced the disease is called macroglobulinemia. The high circulation globulin levels are responsible for many of the clinical signs associated with this disease. A bleeding diathesis is common and usually manifests as epistaxis or gingival bleeding. Bleeding is the result of thrombocytopenia, or platelet dysfunction. The high globulin levels cause the platelets to become coated in protein, which decreases their aggregation ability and thus their ability to initiate hemostasis. When the protein levels in the blood climb, the blood will essentially sludge and hyperviscosity syndrome (HVS) may develop. Signs of HVS include neurological changes (coma, seizure) and ophthalmologic changes (tortuous retinal vessels). The clonal expansion of one antibody will alter the antibody make-up in the body resulting in increased risks of infection in animals with MM as the immune system is not able to function normally.

PU/PD is commonly reported. This can be because of damage to the proximal tubule caused by light chain proteins. Additionally, MM results in the production of osteoclast activating factor, which results in hypercalcemia. Hypercalcemia will cause PU/PD by direct toxicity to the renal tubules and by inhibiting the ADH receptors.

In order to make the diagnosis of MM, at least two and preferably three of the following must be present:

1. Monoclonal gammopathy as demonstrated by serum protein electrophoresis, bi-clonal gammopathies are sometimes reported
2. The presence of osteolytic, punched out bone lesions
3. Bence-Jones proteinuria, urine must be submitted as dip stick analysis will not detect light chain proteinuria
4. Greater than 10% plasma cell infiltration into the bone marrow

Therapy is directed at reducing tumour burden and at clinical signs. For example emergency exsanguination may be necessary to immediately relieve HVS signs. Oral slow acting chemotherapy is the hallmark of treatment for dogs with MM. The response rate is gauged by resolution of globulin levels. With treatment 43% of dogs will have a complete response, 49% will have a partial response (decrease of globulins by 50%) and 9% will have no response. Chemotherapy is very successful at resolving clinical signs and causing significant improvements in quality of life. Therapy is prolonged and results in prolonged survival times. The median survival time, with treatment, is 540 days, though all dogs will eventually die from the effects of the disease.

***Dr. Kevin Finora is a board certified Oncologist and Small Animal Internist. He sees patients Wednesday (including evenings) to Saturday at VEC/RC South. Please do not hesitate to contact Dr. Finora if you have any cancer related questions.***

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