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NEWS FROM THE WORLD OF ONCOLOGY

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PARANEOPLASTIC SYNDROMES: PART 2

Cancer has many effects of the body besides the local effect of the tumour. Paraneoplastic syndromes are effects of the cancer that occur distant to the tumour. Last month I discussed hypercalcemia as a paraneoplastic syndrome and this month I will touch on some other important paraneoplastic syndromes.

Hypoglycemia is a paraneoplastic syndrome that can be commonly seen with various types of cancer. Hypoglycemia is commonly thought to be restricted to only insulinoma. With this cancer, hypoglycemia develops secondary to excessive production of insulin by tumour beta-islet cells.

However, there are other cancers that can lead to the development of decreased blood glucose. Hepatocellular carcinoma is a common cause of hypoglycemia. The intestinal tumour leiomyosarcoma also commonly results in hypoglycemia. In animals having an intestinal mass and hypoglycemia, leiomyosarcoma must be considered a top differential. The pathogenesis of hypoglycemia associated with tumours other than insulinomas is variable. Hypoglycemia can be induced by increased tumour utilization of glucose. Tumours can also cause alterations in hepatic metabolism to decrease glycogenolysis and gluconeogenesis. Many types of tumours have been demonstrated to produce insulin-like growth factor (IGF). This growth factor acts in a similar manner as insulin and will lower blood sugar. If an animal has low blood glucose due to increased IGF production, a paired insulin level will demonstrate a low insulin level. Insulin like growth factors levels can be assessed at most reference labs.

Anemia is another common paraneoplastic syndrome. There are many pathogeneses of cancer-associated anemia. These causes can be broken down to bone marrow and metabolic causes. In bone marrow based anemia the problem is related to a non-functioning marrow. This is most often the result of infiltration of cancer into the bone marrow (myelophthisis). This "crowding out" of normal bone marrow represents a loss of normal functional bone marrow mass resulting in decreased production of red blood cells. Another common cause of paraneoplastic anemia is secondary to chronic disease. Anemia of chronic disease is a disorder of iron metabolism. In these cases, serum iron levels are generally normal but the ability of the body to utilize iron for the metabolism of red blood cells (RBC) is altered. The end result is a depressed ability to form RBC. Cancer is also able to induce abnormal activity within the immune system. Immune mediated hemolytic anemia can be seen in cancer patients. It is for this reason that cancer is always a differential that must be assessed when a pet is diagnosed with immune mediated disease.

Treatment of paraneoplastic syndromes must be targeted towards the underlying cause. This typically means addressing the cancer with surgery, radiation or chemotherapy. It must be kept in mind that when the primary cause of the paraneoplastic syndrome is addressed, there will be a lag time until the resolution of the abnormalities is noted. Therefore treatments such as glucose administration, insulin receptor antagonism, and blood transfusions may be necessary.

Understanding and recognizing paraneoplastic syndromes is essential as these syndromes are often sentinels of disease but, more importantly, are often of more immediate and life threatening concern to the patient.

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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