Cancer & the Pituitary–Adrenal Axis
It has been hypothesized that continued secretion of excess cortisol might be involved in initiation or perpetuation of some tumors. While glucocorticoids suppress lymphocyte counts, fluctuation of cortisol concentrations in the blood is necessary for preventing proliferation of lymphocytes. Continued excess cortisol levels may disrupt this balance, leading to excessive lymphocyte proliferation that may then play a role in development of multiple myeloma or chronic lymphocytic leukemia. Excess adrenal gland activity has been documented in humans with some types of cancer, but the effect of neoplasia on adrenal gland function in dogs is not well-understood. This study was performed to assess the pituitary–adrenal axis in dogs with neoplasia.

Adrenocorticotropic hormone (ACTH)-stimulation tests were done on 20 dogs with lymphoma, 15 dogs with nonhematopoietic neoplasia (NHN), and 16 healthy controls. Plasma endogenous ACTH (eACTH) concentration was also measured, and adrenal gland size was assessed via ultrasound in the dogs with neoplasia. The authors found no difference in basal or ACTH-stimulated cortisol concentration between healthy dogs and those with neoplasia. There also was no difference in eACTH concentration between dogs with lymphoma and those with NHN. The authors did, however, find evidence of both adrenal insufficiency and adrenal stimulation in dogs with neoplasia. The pathophysiology and clinical significance of these results could not be determined, and the authors suggest conducting further studies on the pituitary–adrenal axis with regard to prognosis.

COMMENTARY: Neoplasia may affect pituitary and/or adrenal function in patients and may contribute to patient morbidity. In humans, continued adrenal hyperactivity may be immunosuppressive, and increased basal cortisol levels with decreased response to dexamethasone suppression is associated with a poor prognosis. This study of 35 dogs did not detect a difference in basal cortisol levels between cancer patients and controls, although between 10% and 20% of dogs had some abnormality detected in pituitary or adrenal function. Whether the patient had “mild, moderate, or severe” neoplastic disease did not influence the results. It appears that such abnormalities may influence the clinical course for certain patients, but are unlikely to be a major cause of morbidity in most dogs.—Antony S. Moore, BVSc, MVSc, Diplomate ACVIM