VETERINARY © SPECIALTY CENTER

2051 Waukegan Road, Bannockburn, Illinois 60015
847.459.7535 Fax 847.808.8900
vetspecialty.com

Adrenal Masses or Tumors

Adrenal masses or tumors are not common but can be challenging to treat in veterinary patients. The adrenal gland produces several different hormones including cortisol and catecholamines (sometimes referred to as adrenaline). Cortisol is a hormone that is produced by the body during periods of stress. Catecholamines are hormones that are involved in the "fight or flight" response in the body. It is possible for tumors to grow on the adrenal gland that can produce excessive amounts of cortisol, adrenaline, adrenaline-like hormones or all types of hormones. It is also possible for adrenal tumors to be non-functional, meaning that no hormones are being produced in excess.

Cause
Adrenal tumors can be benign or malignant (cancerous) growths. Because the adrenal gland produces important and potent hormones, benign tumors of the adrenal gland can still make a patient quite ill. Because the adrenal gland is located adjacent to vital blood vessels and the kidney, tumor growth can be dangerous if it invades into the local structures.

Adrenal tumors that over-secrete catecholamine are called pheochromocytoma. Adrenal tumors that over-secrete cortisol are either adrenocortical adenoma (benign) or adenocarcinoma (malignant).

Clinical Signs
Patients with adrenal gland tumor sometimes come in showing signs of excess hormone production. If the tumor is over-secreting cortisol, the patient might be excessively thirsty and hungry, be weak with some hair loss, pant or be restless, especially at night, or have urinary accidents. If the tumor is over-secreting catecholamines, the patient may have intermittent episodes of excitement or nervousness, often coupled with a high heart rate or blood pressure. Some patients have no clinical signs associated with the tumor, and it is found incidentally during an examination for another reason. The tumors are rarely found when the patient becomes acutely ill due to tumor rupture.

Diagnosis
Adrenal tumors are generally found on an ultrasound examination. A normal adrenal gland is only about one-half centimeter in width, so it is usually necessary for a board-certified radiologist to find an adrenal tumor with ultrasound. Additionally, a radiologist is the best person to evaluate the local structures to determine if the tumor is invading into the kidney or major blood vessels. Computed tomography (CT scan) is often used to further define the limits of the tumor, if there is a concern for invasion into a vessel.

Whenever a tumor is found on one of the adrenal glands, we recommend tests to determine whether or not there is evidence that the tumor is causing over secretion of any hormones. This is important in that it can help us to determine whether or not there is a chance of a cure with surgery, as well as to help us to be aware of increased risks of certain complications associated with different tumor types. Often, prior to these tests, we will do a radiograph (X-rays) of the chest to look for any evidence of tumor spread to the lungs. Finding tumor nodules in the lungs changes the options for therapy of adrenal tumors.

The first blood test we do is called an ACTH stimulation test or a low-dose dexamethasone suppression (LDDS) test. This test is used to evaluate whether or not the adrenal tumor is secreting excess cortisol. The second test is called a urine metanephrine test. This test measures the amount of catecholamine (adrenaline and adrenaline-like) hormones in the urine to evaluate whether or not an adrenaline-secreting tumor is likely. Tumors that over secrete cortisol are more likely to be benign than tumors that over secrete adrenaline or adrenaline-like hormones. However, only a biopsy will determine with certainty if the mass is cancerous and has the potential to spread to other organs.

Treatment
Depending on what the tumor is secreting, there may be medical or surgical options for therapy.

Tumors that are secreting cortisol can sometimes be managed with an oral drug called Lysodren/mitotane or trilostane/vetoryl if surgery is not chosen. If the tumor is malignant, it will slow growth and reduce clinical signs associated with the excess hormone production for some time. If the tumor is benign, this same medication can, with regular monitoring, control the clinical signs for years. Benign tumors can still grow into local structures and cause life threatening

problems, but they tend to be significantly less aggressive than malignant tumors. The oral medications do not prevent the spread of malignant tumors. It is always difficult to predict how rapidly a tumor will grow and/or spread to other organs. Many tumors remain dormant for months and others progress rapidly.

There are no medications to control or slow the growth of adrenal tumors that are over-secreting catecholamines. Surgery is recommended in these patients.

In all cases of dogs with adrenal masses that we plan to surgically remove; the patient is started on a medication called phenoxybenzamine. This medication is used to block certain hormone signals that can be sent to the body by the adrenal glands. This is important because being on this medication for 7-10 days prior to surgery helps to decrease the risk of dangerous fluctuations in blood pressure or heart rhythm while the patient is under anesthesia for surgery. This medication may cause a decrease in blood pressure when it is started. Therefore, after starting this medication we recommend that all patients have their blood pressure measured within a few days after starting this medication. Depending on what the blood pressure is at the time of measurement, we will decide how often blood pressure checks need to be performed prior to surgery. In patients who have high blood pressure prior to starting this medication, dosage increases may be needed to get the blood pressure into a normal range prior to surgery. This sometimes delays surgery, but lowers the risk of surgical complications. Surgery to remove the adrenal gland is complex, so meeting with a surgical specialist prior to surgery is necessary.

Prognosis

The prognosis for patients with benign, cortisol-producing, non-invasive tumors is generally very good with oral medication and close monitoring. Patients with malignant, cortisol-producing tumors sometimes do very well with oral chemotherapy and monitoring.

The prognosis for patients requiring surgery to remove a malignant cortisol or catecholamine producing tumor can be variable. Because of the vital structures adjacent to the gland as well as the possibility for hormone, blood pressure and heart rate fluctuations, it is considered a high risk surgery. Patients generally remain in the ICU for several days post operatively and fatal intraoperative or postoperative complications can occur. At Veterinary Specialty Center, we make every effort to prepare the patient prior to and after the surgery for the best possible outcome.

Long Term Follow Up

Depending on the treatment chosen and/or surgical outcome, it is likely your pet will need to be monitored lifelong to assure the best possible control of the disease. Because adrenal tumors are rare and complicated to treat, most patients continue care with either one of the internal medicine specialists or an oncologist at Veterinary Specialty Center in collaboration with your primary care veterinarian.