



## **TRANSITIONAL CELL CARCINOMA ("BLADDER CANCER")**

Transitional cell carcinoma is the most common form of bladder cancer in dogs and cats. Bladder cancer can be difficult to diagnose in dogs and cats since the symptoms mimic infection: straining to urinate, blood in the urine and frequent urination. Transitional cell carcinoma has been linked with flea dips and obesity in dogs, and certain breeds including Scottish Terriers are at higher risk. Tumors usually occur at the bladder opening and can block the urethra, which is the pathway for urine to leave the body. Transitional cell carcinoma may be very advanced by the time of diagnosis, and many dogs with this cancer develop new lesions in the lungs, lymph nodes, or other organ systems (metastasis). Therefore, treatment of transitional cell carcinoma addresses two issues: control of the cancer within the bladder to avoid blockage, and prevention of metastasis.

### **TESTING**

Several tests are used to evaluate patients with transitional cell carcinoma. Ultrasound is performed to evaluate the bladder, local lymph nodes and other internal organs. Radiographs are used to examine the lungs, and blood and urine tests check for changes in kidney function. Ultrasound can also assist in collecting tissue samples from the lymph nodes for more thorough analysis. Ultrasound examinations and radiographs are helpful in measuring progress against tumor growth and are usually repeated every six to eight weeks.

### **TREATMENT**

**Surgery** is a common treatment to remove many cancers. Unfortunately, the location of most tumors at the bladder opening prevents complete removal of the cancer. Ureters are the delicate structures which drain urine from the kidneys into the bladder. Attachments of the ureters into the bladder and the urethra opening interfere with the amount of tissue that can be safely removed. Surgery is useful to collect a tissue sample for diagnosis. Surgery is also helpful to create a temporary opening through the tumor or to place a semi-permanent catheter into the bladder to remove urine, known as a "tube cystostomy."

**Radiation therapy** involves a series of 5 treatments, exposing the lower urinary tract to a high-energy radiation beam. The beam must be precisely aimed, requiring a short period of anesthesia for each treatment. Around 90% of patients have an improvement in clinical signs following the treatments. The length of improvement can range from a few weeks to several months.

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**Chemotherapy** is the use of medications to directly kill the tumor cells. Several drugs are used to treat bladder cancer in dogs. These medications are injected into the bloodstream every one to three weeks, depending on whether one or more medications are used. These medications typically do NOT cause significant side effects in dogs. For instance, dogs do not lose hair from chemotherapy, unless they are terriers, poodles, or English sheepdogs. Chemotherapy may interrupt the normal replacement of cells that line the digestive tract and the white blood cells that form in the bone marrow to help our bodies fight infection. When chemotherapy drugs damage these normal cells, symptoms can range from a mild, temporary decrease in appetite to loose stools, vomiting, and fever. Again, most dogs have no symptoms. *Our philosophy is that cancer patients should feel better, not worse, from their therapy.*

**Immunotherapy** involves agents that may stimulate the patient's own immune system function to fight the cancer. With successful immune stimulation, tumor cells are recognized and eliminated from the body. Piroxicam (also known as Feldene) is a human arthritis medication that appears to help the immune system to fight bladder cancer more effectively. Piroxicam can cause severe stomach upset (even bleeding ulcers) if over-dosed, given on an empty stomach, or given in combination with medications such as Aspirin, Rimadyl, Etogesic, or Prednisone. Piroxicam should be immediately discontinued if vomiting or a lack of appetite occurs.

### **PROGNOSIS**

The best treatment for bladder cancer is usually a combination of the above treatments and is often different for each patient. Surgery and/or radiation therapy are usually necessary if a patient becomes unable to urinate because of tumor blockage. Chemotherapy and piroxicam are frequently used together to target both the tumor tissue within the bladder, as well as cancer cells that may be present in other areas. Antibiotics can be helpful in controlling secondary bacterial infections in the bladder. We are still learning about the factors that result in a wide range of life expectancy. As individuals, each of our patients will have a slightly different response and outcome. Some patients can live comfortably for many months or even years with this cancer. Our goal is to maintain the best quality of life possible.

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