

## Information for Oncology Clients

### Transitional Cell Carcinoma in Dogs

Comprehensive Cancer Care Service

Ryan Veterinary Hospital of the University of Pennsylvania

The most common cancer of the urinary tract in dogs is transitional cell carcinoma (TCC), which is a cancer of the epithelial cells that line the urinary tract. This cancer most commonly occurs in older female dogs (although both males and females can be affected). Certain breeds, such as Scottish Terriers, West Highland White Terriers, beagles and Shetland sheepdogs are predisposed to developing this cancer.

Dogs with transitional cell carcinoma usually show clinical signs related to the growth of a mass in the bladder, urethra or prostate. These signs may include blood in the urine, pain on urination, increased frequency of urination, and in more advanced cases, obstruction of the urethra leading to a decreased urine stream or straining without producing urine. As transitional cell carcinoma progresses, it tends to become more locally advanced and can also metastasize (spread) to other sites in the body, such as pelvic lymph nodes, lungs, and bone. For this reason, it is important that dogs suspected of having transitional cell carcinoma undergo ‘staging’ tests to determine the extent of cancer involvement. Generally this includes a complete physical exam, CBC (complete blood cell count), blood chemistry, urinalysis, thoracic radiographs (chest X-rays), abdominal ultrasound, and a urine culture.

Diagnosis of TCC is typically made with either urine cytology or a tissue biopsy sample, often collected by cystoscopy. The CADET BRAF Mutation Detection Assay is also now available to detect a common genetic mutation in dogs with transitional cell carcinoma; this test is performed on urine that can be collected at home and submitted to a lab for analysis. A positive result is highly specific for a diagnosis of transitional cell or urothelial carcinoma. The prognosis for patients with TCC is dependent on the extent of cancer involvement at diagnosis, with cancers that have metastasized or that involve the prostate or urethra having worse prognoses than those that are localized within the bladder. Without treatment, most dogs will die from complications of their cancer within a few to several months. Unfortunately, treatment is rarely curative and is therefore focused on maintaining comfort and a good quality of life. This is known as palliative treatment or palliative care. Options for treatment include non-steroidal anti-inflammatory drugs (NSAIDs), chemotherapy, and radiation therapy. Additionally, for tumors that are causing an obstruction of the ureters, urethra or colon, stents can be placed to help keep these passageways open. Unlike many other cancer types, TCC is not typically treated with surgery, given that complete excision often is not possible, and that regrowth is common after surgery even when complete excision is performed.

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Dogs with TCC treated with NSAIDs have been shown to have improvement in their symptoms and live longer compared to dogs that are not treated with NSAIDs. Typically we administer an oral NSAID, sometimes in conjunction with medications that can help to decrease the side effects of NSAIDs (such as gastrointestinal upset).

Chemotherapy has been shown to act synergistically with NSAID therapy and can be added to further inhibit growth of the primary tumor and progression of metastatic disease. With the addition of chemotherapy to NSAID therapy, the average survival time is 1 year for dogs with bladder involvement, and 6 months if there is prostate or urethral involvement.

Palliative radiation therapy can also be used in the treatment of TCC, particularly for relief of pain associated with bony metastases or to slow the growth of an enlarged prostate or sublumbar lymph nodes. This consists of weekly treatments radiation therapy which are administered under brief anesthetic periods.

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