



**Veterinary Emergency
+ Referral Center**
of Hawaii

**Ettinger: Textbook of
Veterinary Internal Medicine, 7th Edition
Transitional Cell Carcinoma
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What is a transitional cell carcinoma?

Transitional cell carcinoma (TCC) is a tumor (cancer) found most commonly in the urinary bladder and the urethra (the tube connecting the bladder with outside). It is most common in older dogs. It is rarely found in cats. In dogs, this tumor is most commonly seen in small breeds such as Scottish terriers, West Highland white terriers, Dachsunds, and Shetland sheepdogs. Although there is probably some genetic component to the development of TCC, and rare cases have been linked with the use of cyclophosphamide (a chemotherapy drug), it is usually not known why this tumor develops.

What are the symptoms of transitional cell carcinoma?

A diagnosis of TCC is suspected when the following symptoms are exhibited:

- Straining to urinate
- Urinating small amounts frequently
- Blood in the urine

These symptoms are not specific for a bladder tumor. Animals with bladder infections or bladder stones may behave the same way. A bladder may be suspected in animals with these symptoms if they have only temporary relief or no relief from antibiotic therapy.

What tests are needed?

It is rare that a bladder tumor can be felt by palpating (feeling) the belly, and most bladder tumors do not show up on x-rays. Some tests your veterinarian may recommend if a bladder tumor is suspected include the following:

- Urinalysis, or microscopic examination of a urine sample
- X-rays and ultrasound of the abdomen
- Biopsy to confirm the diagnosis
- X-rays of the lungs to check for potential spread of the tumor
- Urine culture and blood work to assess the overall health of the pet to help determine what treatment options could be offered

What treatment is needed?

Several possible treatments exist for TCC:

- **Surgery** may be a treatment for cats with TCC, because the tumor tends to involve a part of the bladder that is not essential for bladder control. Surgery is not usually a good treatment option for TCC in dogs because the tumor is often located in the neck of the urinary bladder. Surgery in this site may render the dog incontinent (unable to control urination) plus the surgery is rarely curative. However, if your pet cannot pass urine because they are obstructed by the tumor, a surgical procedure called a *tube cystostomy* may be an option. The advantages of a tube cystostomy are that they are easy to manage, they allow animals to pass urine, and they are

relatively easy to place. The disadvantages are recurrent urinary tract infections and occasional complications (e.g., the tube is pulled out, or the pet chews through the tube). Animals with tube cystostomies need to have their urine cultured on a regular basis. They also may require continual antibiotic therapy.

- **Drug therapy** is the most common treatment for TCC. Up to 40% of dogs with TCC may have a response to medical therapy, with response defined as at least 50% decrease in tumor size. Although not all tumors shrink in response to therapy, another positive response is a decrease in the growth rate of the tumor. Medications that may have some effect against TCC in dogs or cat include the following:

1. Piroxicam
2. Mitoxantrone
3. Carboplatin
4. Doxorubicin
5. Cyclophosphamide

Piroxicam is an anti-inflammatory drug that also has anticancer activities. Its main side effects include loss of appetite and vomiting secondary to stomach irritation. These side effects may be minimized by giving the medication with food. If your pet has a diminished appetite, vomiting, or a change in the consistency of their stool while on piroxicam, discontinue the medication and contact your veterinarian. The other drugs listed are more traditional anticancer drugs (i.e., chemotherapy drugs).

Two equally important goals must be kept in mind when choosing chemotherapy to treat your pet:

1. Control the tumor for as long as possible.
2. Maintain a good to excellent quality of life throughout the duration of treatment

The chemotherapy drugs used for dogs and cats are the same drugs used in people. Because maintaining a normal quality of life is a main goal, chemotherapy is used somewhat less aggressively than in human medicine. Also, dogs and cats seem to be more tolerant of chemotherapy than people, and they do not suffer side effects as severe as those in people. However, because chemotherapy drugs affect rapidly dividing cells, side effects can occur in dogs and cats.

Two important sets of cells in the body naturally grow and divide rapidly. These are cells that line the bone marrow (which is where the red and white blood cells come from), and the cells that line the gastrointestinal tract. A complete blood count (CBC) should be performed immediately before and 7 to 10 days after your pet has chemotherapy. If the white blood cell count is low, chemotherapy will be delayed by 4 to 7 days; the counts will come back up on their own. Rarely the white blood cell count may drop so low that your pet is at risk of developing an infection. In this situation, antibiotic therapy is indicated. At home, you may notice that your pet has a decreased appetite for 2 to 3 days after chemotherapy. If you feel that the vomiting or diarrhea is severe, contact your veterinarian. Medication may be used to help minimize or control these side effects.

Occasionally, radiation therapy may be used to help relieve some of the clinical signs associated with the tumor. Used in this manner, there should not be any side effects of the radiation. Your veterinarian will help determine the best treatment option for your pet.

What is the prognosis?

Ultimately, TCC is considered to be a fatal disease. With treatment, average survival times following diagnosis are around 10 to 12 months. However, the quality of life for most pets being treated for TCC is excellent, and your pet should be happy and comfortable during his/her treatments.