

# TRANSITIONAL CELL CARCINOMA OF THE URINARY TRACT (KIDNEY, URETERS, BLADDER, URETHRA)

## BASICS

### OVERVIEW

- The urinary tract consists of the kidneys, the ureters (the tubes running from the kidneys to the bladder), the urinary bladder (that collects urine and stores it until the animal urinates), and the urethra (the tube from the bladder to the outside, through which urine flows out of the body)
- Transitional cell carcinoma is a cancer arising from the transitional epithelium of the kidney, ureters, urinary bladder, urethra, prostate, or vagina; the transitional epithelium is a specialized type of lining in the urinary tract that contracts or stretches in response to the size of the bladder and other organs

### GENETICS

- Possible genetic basis in Scottish terriers

### SIGNALMENT/DESCRIPTION of ANIMAL

#### *Species*

- Dogs and cats

#### *Breed Predilections*

- Dogs—Scottish terriers, West Highland white terriers, Shetland sheepdogs, American Eskimo dogs, and dachshunds; may occur in any breed
- Cats—none

#### *Mean Age and Range*

- Dogs—8 years; range, 1 to 15+ years of age
- Cats—7 years; range, 3 to 16 years of age
- Middle-aged to old, spayed, female small-breed dogs most commonly reported

#### *Predominant Sex*

- Female

### SIGNS/OBSERVED CHANGES in the ANIMAL

- Similar to those of bacterial urinary tract infection; for patients showing temporary or no response to appropriate antibiotics, consider transitional cell carcinoma; may temporarily respond to antibiotic therapy
- Recurrent straining with slow, painful discharge of urine (known as “stranguria”); abnormal frequent passage of urine (known as “pollakiuria”); blood in the urine (known as “hematuria”); difficulty urinating (known as “dysuria”); inability to control urination or leaking urine (known as “urinary incontinence”); or any combination of these signs
- Physical examination findings often normal
- Mass—occasionally may be felt in the abdomen at the location of the urinary bladder
- Urethral or vaginal transitional cell carcinoma—may be able to feel mass during rectal examination
- Enlarged intrapelvic or sublumbar lymph nodes—may be able to feel during rectal examination

### CAUSES

- Dogs—obesity; environmental carcinogens (substances that cause cancer); long-term (chronic) exposure to flea-control products; and long-term treatment or a large bolus dose of cyclophosphamide (a chemotherapeutic drug)
- Cats—unknown

## TREATMENT

### HEALTH CARE

- Outpatient—stable patients
- Seek advice from a veterinary oncologist prior to initiating treatment and consider current recommendations
- Radiation therapy: intraoperative radiation therapy is reported to result in longer survival times and better local control than chemotherapy; potential side effects: narrowing (stricture) and scarring (fibrosis) of the bladder with lack of control of urination or urine leakage (urinary incontinence)

### ACTIVITY

- Normal

### DIET

- Normal, unless animal also has kidney failure

## **SURGERY**

- Surgery for transitional cell carcinoma can be challenging as the tumor easily sheds cancer cells; these cells can be spread into the abdomen during surgery
- Surgery may result in a cure, if the mass can be removed completely
- Wide surgical excision (that is, surgically removing the tumor and wide borders of apparently normal tissue) is necessary; up to 50% of the urinary bladder may be removed surgically with minimal loss of function
- Placement of a catheter from the bladder and exiting through the abdominal wall to allow urine to be removed from the body (procedure known as “tube cystostomy”)—may greatly prolong survival times by bypassing blockage of the urethra (known as “urethral obstruction”)

## **MEDICATIONS**

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- **Chemotherapy**—piroxicam (Feldene®), cisplatin, carboplatin, mitoxantrone (as single agents or as combination therapy for certain drugs); piroxicam and cisplatin cannot be combined because of kidney toxicity; other agents (doxorubicin or doxorubicin/cyclophosphamide combination) may have activity
- **Antibiotics**—administered as necessary for secondary urinary tract infections

## **FOLLOW-UP CARE**

### **PATIENT MONITORING**

- X-rays using contrast media in the bladder (known as “contrast cystography”) or ultrasound examination—every 6 to 8 weeks; assess response to treatment and screen for spread of cancer into the lymph nodes (known as “lymph-node metastases”)
- Chest X-rays—every 2 to 3 months; detect spread of cancer into the lungs (known as “pulmonary metastatic disease”)

### **POSSIBLE COMPLICATIONS**

- Blockage of the urethra (the tube from the bladder to the outside, through which urine flows out of the body) or ureters (the tubes running from the kidneys to the bladder), and kidney failure
- Spread of cancer (metastasis) to regional lymph nodes, lungs, or bone
- Recurrent urinary tract infection
- Lack of control of urination or urine leakage (urinary incontinence)
- Reduction of bone-marrow activity (known as “myelosuppression”), resulting in low number of red-blood cells, white-blood cells, and/or platelets or gastrointestinal toxicity secondary to chemotherapy
- Gastrointestinal ulceration secondary to piroxicam therapy

### **EXPECTED COURSE AND PROGNOSIS**

- Long-term prognosis grave
- Progressive disease probable
- Median survival—no treatment, 4 to 6 months; with treatment, 6 to 12 months

## **KEY POINTS**

- Long-term prognosis is poor, but control of signs to make the animal more comfortable (known as “palliation”) is often attainable
- The tumor usually cannot be removed surgically in dogs