Canine Transitional Cell Carcinoma

Timothy M. Fan, DVM, PhD, DACVIM (Oncology, Internal Medicine)
University of Illinois

In the Literature

Rippy SB, Gardner HL, Nguyen SM, et al. A pilot study of toceranib/vinblastine therapy for canine transitional cell carcinoma. *BMC Res*. 2016;12(1):257.

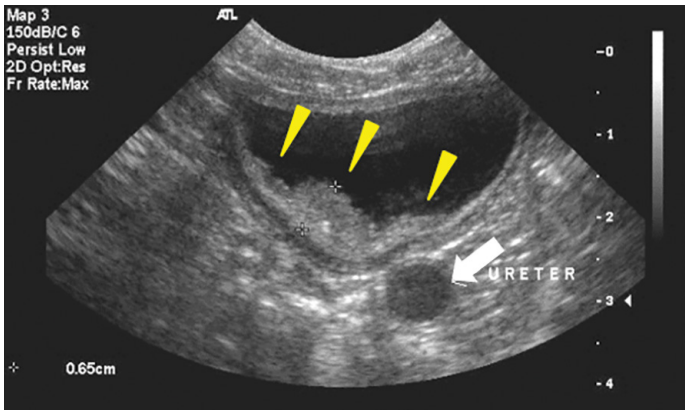
FROM THE PAGE ...

Transitional cell carcinoma (TCC) is the most common tumor of the canine urinary bladder. Identified risk factors for TCC development include heritable genetic factors and environmental exposures.[1] Breeds at the greatest risk for TCC development include Scottish terriers, Shetland sheepdogs, West Highland white terriers, and beagles.[2]

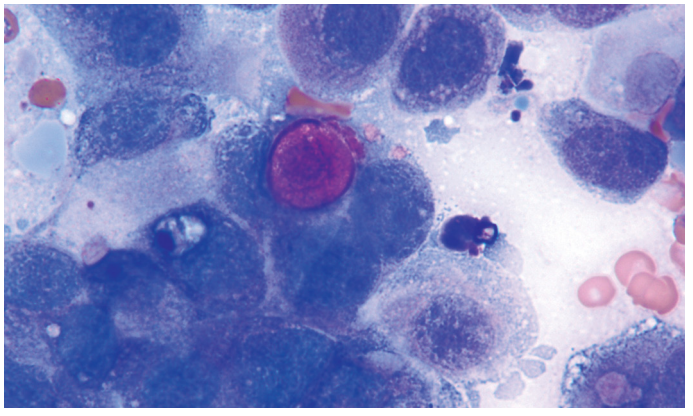
Despite awareness by veterinary professionals, TCC tumors are often locally advanced at diagnosis. The location of disease frequently limits definitive surgical options. As such, most dogs diagnosed with TCC succumb to anatomic and metabolic complications associated with local tumor progression (eg, urinary obstruction, pain, azotemia).[3] Given the current limitations in effective TCC treatment, concerted efforts by veterinary clinicians have focused on evaluating novel combination therapies and response-assessment tools for improving canine TCC management.

This preliminary study evaluated the combined anticancer activities of toceranib–vinblastine in managing local tumor growth in the bladder lumen and associated wall structures. Secondarily, 2 conventional imaging modalities (ie, ultrasound, CT) were compared for their intra- and interoperator reliability in monitoring changes in primary tumor size. In addition, the respective values of sonographic and CT assessments of tumor response for predicting the duration of disease control were compared.

Although the regimen of toceranib–vinblastine was a tolerable drug combination for most dogs, the documented anticancer activity exerted by toceranib–vinblastine combination did not exceed that of either vinblastine or toceranib when used as single agents. As compared with ultrasonography, CT was identified as a more reliable imaging modality for monitoring local disease progression when recorded by the same or a different operator; however, neither ultrasonography nor CT proved to be clinically useful in predicting durability of anticancer responses.



▲ **FIGURE 1** Classic sonographic findings of bladder TCC in a dog. A tumor mass (**yellow arrowheads**) arising from the deep muscle layers of the bladder wall extends into the bladder lumen, with chronic urinary obstruction resulting in development of hydroureter (**white arrow**). *Photo courtesy of Louis-Philippe de Lorimier, DVM, DACVIM (Oncology)*



▲ **FIGURE 2** Cytology collected from traumatic catheterization confirming TCC diagnosis in a male dog. Large aggregates of epithelial cells with criteria of malignancy made up the majority of cells microscopically identified. *Photo courtesy of Anne M. Barger, DVM, MS, DACVP*

… TO YOUR PATIENTS

Key pearls to put into practice:

1 Clinical signs associated with local tumor progression are the most common life-limiting factors for dogs diagnosed with TCC.

2 Combining drugs that exert activity as single agents does not necessarily result in superior anticancer activities.

3 Although CT and ultrasonography are useful for monitoring changes in local tumor size, these imaging modalities alone should not drive clinical decision-making. All sources of clinical, diagnostic, and radiologic information should be combined for guidance in clinical management of dogs with TCC.

References

1. Glickman LT, Schofer FS, McKee LJ, Reif JS, Goldschmidt MH. Epidemiologic study of insecticide exposures, obesity, and risk of bladder cancer in household dogs. *J Toxicol Environ Health.* 1989;28(4):407-414.
2. Knapp DW, Glickman NW, Denicola DB, Bonney PL, Lin TL, Glickman LT. Naturally-occurring canine transitional cell carcinoma of the urinary bladder: a relevant model of human invasive bladder cancer. *Urol Oncol.* 2000;5(2):47-59.
3. Mutsaers AJ, Widmer WR, Knapp DW. Canine transitional cell carcinoma. *J Vet Intern Med*. 2003;17(2):136-144.