

# Ultrasonographic Diagnosis of Transitional cell Carcinoma of the urinary bladder

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## Abstract

The most common cancer of the dog urinary bladder is invasive transitional cell carcinoma (TCC) of intermediate to high grade. TCC is a malignant tumor, i.e. cancer that develops from the transitional epithelial cells that line the bladder. In dogs, this tumor invades into the deeper layers of the bladder wall including the bladder muscles. Canine TCC also has the ability to spread to lymph nodes and to other organs in the body (lung, liver, others). TCC most frequently is found in the bladder, but can also develop in the kidneys, ureters, and prostate.

## HISTORY

A Ten-year-old, male, local breed dog was referred to the Batna University, Surgery and imaging service for further investigation after a two-month duration of intermittent haematuria. The dog was alert, had a normal appetite and failed to respond to vigorous treatment for bacterial cystitis. Physical examination revealed tensed abdomen and a pale mucous membrane. A large firm mass was palpable in the caudal abdomen. Hematological profiles indicated a normal haemogram. Elevated alkaline phosphatase (225 units) activities with normal levels of blood urea nitrogen (13 mg%) and creatinine (0.8 mg%) were identified on the serum biochemical analyses. Plain abdominal radiography showed a normal hepatic and kidney size with a marked distension of urinary bladder without any evidence of radiopaque calculi.

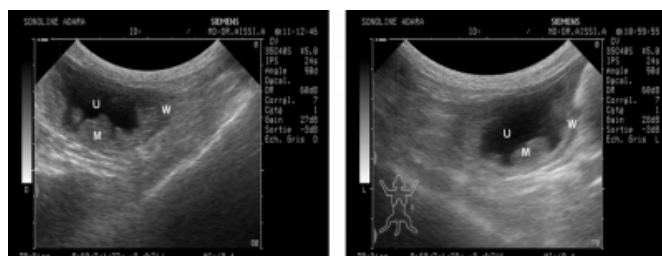
## ULTRASONOGRAPHIC EVALUATION

Ultrasonographic evaluation of the abdomen was performed using a B-real mode sonographic examination with an 5 MHz broadband, convex, phased array transducer. The echogenicity relationship of liver, spleen and kidney parenchyma were within a normal limits. A large mass , 3.8 by 7.5 cm in diameter, with mixed echotexture occupied the bladder with only small amount of anechoic urine surrounding it (Figs. 1 & 2). This mass was sessile and had an irregular intraluminal margin protruding from the mid-dorsal region of bladder wall. The urinary bladder wall was thickened (8 mm in diameter) at the wide base of the infiltrative mass attachment. Abnormalities in the kidneys,

ureters and iliac lymph nodes were not observed.

## Figure 1

Figure 1: A sagittal ultrasonographic image (A- B) of the urinary bladder of the Ten-year-old, male, Local breed dog. A large, sessile mass, with mixed echogenicity occupied the urinary bladder with only small amount of urine surrounding it. The urinary bladder wall was thickened at the infiltrative mass attachment M: mass U: urine W: urinary bladder wall.



## DIAGNOSIS

Ultrasonographic diagnosis: Transitional cell carcinoma of the urinary bladder.

## COMMENTS

Ultrasound now provides an alternative method of diagnosing urinary bladder disease. It is cost and time effective compared to contrast cystography. In the presented dog, a transitional cell carcinoma of the bladder was histopathologically confirmed from the specimen surgically removed. Transitional cell carcinoma is ultrasonographically characterized by focal urinary bladder wall thickening with a sessile mass protruding into the bladder lumen (Leveille et al., 1992 ,Aissi et al., 2005). The tumor mass is generally

hypoechoic or heteroechoic and tends to have anirregular intraluminal margin. The attachment of the mass to the bladder wall is often abrupt and thickening of the bladder wall at the site of attachment can usually be recognized. The tumor mass may also be seen as papillary or polypoid extension into the bladder lumen. However, some bladder neoplasias may spread through the bladder wall. The ultrasonographic appearance of bladder neoplasia is similar to those of polypoid cystitis, adherent blood clots and mural haematomas. Aspiration, biopsy or both are necessary to confirm the presence of bladder neoplasia. It may be better to use the technique of ultrasound-guided catheter biopsy (Lamb et al., 1996) because of the possibility of seeding the needle track with tumor cells when the aspiration technique was chosen (Gilson and Stone, 1990). When a bladder mass is detected, the sublumbar region should be

ultrasonographically evaluated for evidence of iliac lymphadenopathy (metastatic or reactive). Renal pelvis and ureter should also be examined for dilation secondary to ureteral obstruction.

### **References**

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