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Non-invasive transitional cell carcinoma in a Labrador

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Abstract

A 12-year-old, female Labrador was presented to the Madras Veterinary College Teaching Hospital with the history of pollakiuria and hematuria. On Ultrasound scanning, echogenic area noticed in the lumen of the urinary bladder adherent to the bladder wall. Cytological examination of the urine sample was suggestive of transitional cell carcinoma. Partial cystectomy was performed and the tumor was sent to the Department of Veterinary Pathology for histopathological examination and confirmatory diagnosis. On microscopical examination of the papillary projections found to be protruding from the mucosa with a central fibrovascular core. The basement membrane was intact without any tumor invasiveness into submucosal layer. Immunohistochemical staining was done with monoclonal antibodies against cytokeratin which is normally found in urothelium. It was found to be intensely positive. Based on Cytology, Histopathology and Immunohistochemistry it was confirmed as a non-invasive transitional cell carcinoma.

Keywords: Labrador, noninvasive transitional cell carcinoma, immunohistochemistry, cytokeratin

Introduction

Urinary bladder tumours constitute approximately 2% of the reported malignancies in dogs. Among these, transitional cell carcinoma is the most common malignant type of tumour that is affecting urinary bladder (Meuton, 2017) [2]. The primary site of these tumors is trigone area of the bladder. Transitional cell carcinoma is also called urothelial carcinoma occur most commonly in neutered dogs than intact dogs. Mostly dogs with Transitional cell carcinoma are presented with signs like hematuria, stranguria, pollakiuria, cystitis and dysuria. The bladder wall appears thickened at the site of tumor. High grade papillary and infiltrating types are more common, other types also occur but less common. Large cytoplasmic vacuoles and Melamed wolinska bodies are characteristic of Transitional cell carcinoma (Withrow *et al.*, 2013) [8]. Cytokeratin 7 and UPIII are considered to be reliable markers for the identification of transitional cell carcinoma (Ramos Varma *et al.*, 2003) [6]. The present paper reports on the Occurrence, Cytological, Histopathological and Immunohistochemical studies of a non invasive transitional cell carcinoma in a Labrador dog.

Materials and Methods

A 12-year-old female Labrador was presented to the Madras Veterinary College with the history of pollakiuria and hematuria. On Ultrasound Scanning examination revealed Echogenic area noticed in the lumen of the bladder. Urine was collected and sediment analyzed by light microscopically. Under general anesthesia partial cystectomy was performed and the tumor sample was sent to the Department of Veterinary Pathology for histopathological examination and confirmatory diagnosis. The tissue had been fixed in 10% formalin and embedded in paraffin wax. Sections of 5 µm thickness was prepared and stained with H&E for histopathological examination. Immunohistochemical staining of Cytokeratin was performed as per recommendation of the manufacturer (Bio genex, USA) using super sensitive labeled poly horse radish peroxidase (HRP) polymer method.

Results and Discussion

Transitional cell carcinoma identification depends upon the cytological examination of urine and tissue biopsy. In this case cytological examination of urine revealed clusters of neoplastic cells and multinucleated cells which are in agreement with previous report by (Whisnant *et al.*, 2003) [7]. The WHO classification 2012 recommendation transitional cell carcinoma can be classified as urinary papilloma and four grades of urothelial carcinoma which include two low grade and two high grade transitional cell carcinoma (Comperat *et al.*, 2018) [11].

According to (Patrick *et al.*, 2006) ^[5] WHO/ISUP classification system in human medicine was considered to be applicable to canines also. Modification of this grading system in animals includes low grade and high-grade urothelial carcinoma. Most of the canine transitional cell carcinomas are found to be invasive and high grade. High grade transitional cell carcinoma are characterised by the presence of anaplasia and invasiveness. This classification is done on the basis of their degree of anaplasia, mitotic potential and invasiveness. Histopathological examination of this case revealed that the papillary projections found to be protruding from the mucosa with a central fibro vascular core. Papillary projections are fused (Fig.1). The cell layer thickness was increased with irregularly arranged cells. Anisocytosis and anisokaryosis were observed. Prominent nucleolus was observed. The basement membrane was intact without any tumor invasiveness in to submucosal layer. Immunohistochemical staining was done with monoclonal antibodies against cytokeratin (Fig.2) which is normally found in urothelium. It was found to be intensely positive. These findings were similar to those reported by (Ramos Vera *et al.*, 2003) ^[6] for immunohistochemical staining with Cytokeratin 7 on urothelial neoplasm shows heterogenous staining in the same section intense positive reaction notice on the apical borders of the glandular structures and the in intracytoplasmic lumen. Based on cytology, histopathology and immunohistochemically it was confirmed that the tumour sample is of non-invasive type of transitional cell carcinoma.

Summary

The present case showed characteristics of non invasive high grade Transitional Cell Carcinoma with irregular arrangement of papillary projection without invading the basement membrane. Also it showed strong positive reaction for Cytokeratin through immunohistochemically.

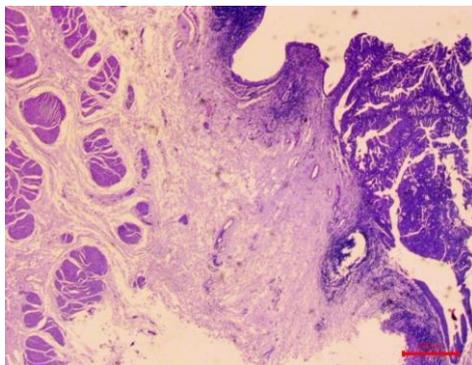


Fig 1: Transitional Cell Carcinoma-Papillary Projection of epithelium-H&E Bar=1.25 µm

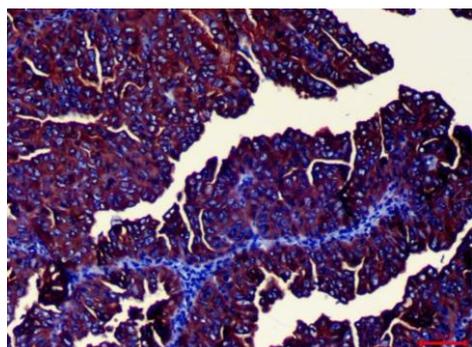


Fig 2: Immunohistochemistry-Cytokeratin-Transitional Cell carcinoma-Strong reaction- 90%- Bar=10µm

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