Unilateral Renal Cell Carcinoma with Lung Metastasis in a Dog

Kyungpil Lee, Minsu Lee, Daehyun Kim, Wookhun Chung, Jaehoon Lee, Hwaseok Chang, Chibong Choi, Sunhee Do, Kidong Eom and Hwiyool Kim*

Department of Veterinary surgery, College of Veterinary Medicine, Konkuk University, Seoul, Korea

Signalment: A 5-year-old castrated male Maltese dog with a symptom of intermittent hematuria and stranguria was referred to Konkuk Veterinary Medical Teaching Hospital for additional diagnostic tests and treatment.
Results: Urinalysis revealed turbid red urine with 4+ RBC and 3+ protein. On radiography, left kidney was enlarged, had irregular margin and increased opacity. Right kidney was within normal ranges in its size and contour. On ultrasonograghic examination, a large mass with heterogeneous echogenecity and vascular response was seen in the left kidney. Also, the mass invaded the caudal vena cava and evoked turbulent flow in the cauda vena cava. Positron emission tomography combined with computed tomography (PET/CT) were performed to identify the features of the mass and whether metastasis or not. On CT findings, there were no metastatic lesions in thorax. The large mass extending from left kidney to medial part of right kidney invaded caudal vena cava. On PET/CT images, the mass showed increased uptake of FDG. These signs indicate that the mass is malignant form and has a high risk of metastasis to other organs. But, there was no metastatic region. The patient was euthanized due to client request, and we performed autopsy for histopathological examination. Grossly, tumor in left kidney was enlarged and had abnormal shape. Round dark nodule 4~5 mm in size were found in right lung lobe. Microscopically, the cells were basophilic and had round-oval shape nuclei with mitosis. The cytoplasm was scant and had indistinct borders. The tumor was diagnosed as renal cell carcinoma.
Clinical relevance: Nephrectomy is recommended in cases of unilateral renal carcinoma where the contralateral kidney is functional and metastases are not grossly evident. Dogs with renal cell carcinoma occasionally live for years after removal of the effected kidney. However, metastasis typically is present at the time of diagnosis because of the onset of clinical signs. Adjuvant chemotherapy or radiation therapy may prolong the lives dogs and cats with malignant renal neoplasia. Although PET/CT has a superior resolution compared with other nuclear imaging modalities, detection capacity is still limited to tumors exceeding a certain size. Also, FDG uptake is not well distinguished with tumor activity or inflammation, because glucose utilization may be increased in areas of inflammation.

Key words: Renal carcinoma, Lung metastasis, PET/CT, Autopsy

*Corresponding author: hykim@konkuk.ac.kr