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Papillary Type Renal Cell Carcinoma with Sarcomatoid Differentiation

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Abstract **Case Report**

Renal cell carcinoma is the most common renal tumor in adult population. Sarcomatoid differentiation of renal cell carcinoma is quite aggressive in nature and has poor prognosis. In this study, a case of 69-year-old female patient who initially presented with hematuria was discussed.

Keywords: Renal cell carcinoma; papillary; sarcomatoid; variant.

INTRODUCTION

Renal cell carcinoma (RCC) is the most common renal tumor in adult population (Lebacle, 2019). 90% of all renal cancers are RCCs (Znaor, 2015). RCCs are most commonly detected in the 5th and 6th decades of life. When compared by gender, female to male ratio is 2:3 (Jemal, 2007). Sarcomatoid renal cell carcinoma (sRCC) is seen in 1-5% of all renal neoplasms (Shuch, 2012). sRCC is also known as carcinosarcoma, anaplastic carcinoma and spindle cell carcinoma (Cheville, 2004). sRCC has a biphasic structure which contains mesenchymal and epithelial elements. sRCC is seen in more advanced stages when compared to other RCCs. If sRCC is presented with symptoms, 45-84% of them have metastases (Mian, 2002). sRCCs are associated with poor prognoses even for patients diagnosed with stage 1 or stage 2 RCC and its median overall survival is between 5 to 12 months (Tannir, 2021). Furthermore, the period between the nephrectomy operation and recurrence of the cancer is substantially shorter in patients with sRCC than in those with non sRCC (18,8 months vs. 42,9 months; $p < 0,0001$) (Kyriakopoulos , 2015). Herein we report a case of papillary type RCC with sarcomatoid differentiation.

CASE PRESENTATION

A 69-year-old female patient who initially presented with hematuria and flank pain lasting for 3 months applied to our outpatient clinic. The patient has no history of smoking and occupational exposure to known carcinogens. The patient had history of hypertension and supraventricular tachycardia and no additional medical conditions. Computerized tomography (CT) scan revealed a 2.5cm parapelvic nodular mass containing a cystic-solid lesion in the left kidney (Figure 1). Considering laboratory tests; serum creatinine: 1.07, urea: 36.0, haemoglobin: 9.4 and WBC: 8800. Before the operation, the patient underwent a cystoscopy examination. Examination results were normal and cytology was benign. Afterwards, patient underwent left laparoscopic radical nephrectomy and paraaortic lymph node dissection. The left kidney pathology revealed a papillary type RCC with sarcomatoid differentiation (Figure 2). The pathology of the lymph node revealed RCC metastasis. PET-CT scan performed 1 month after the operation revealed metastatic lymph nodes in the retroperitoneal area, left paraaortic area and aorta-caval region. In addition, involvements suggestive of metastases were observed in L5, T8 vertebrae, right scapula and anterior surface of the left 2nd costochondral junction. The patient was referred to the medical oncology

department. The medical oncologist initiated Nivolumab treatment. The patient was given nivalumab treatment 2 times in 28-day periods. PET-CT scan performed after nivolumab treatment revealed the progression of the metastatic lymph nodes in the retroperitoneal area, left paraaortic area and aorta-caval region. In addition, there was metastatic progression at liver segment 7. New metastases were observed in the T6, L1 and L2 vertebrae, sacrum, medial portion of the left 4th costa, and in the neck of the left femur. There was a partial regression in the metastases in the T8 and L5 vertebrae. The patient was referred to the radiation oncology department for radiotherapy after the nivolumab therapy. The patient received 10 sessions of radiotherapy. Afterwards, the patient was administered one dose of immunotherapy and pulmonary edema was developed while the patient was receiving immunotherapy. The patient was hospitalized due to pulmonary edema. She died on the 10th day of her hospitalization.

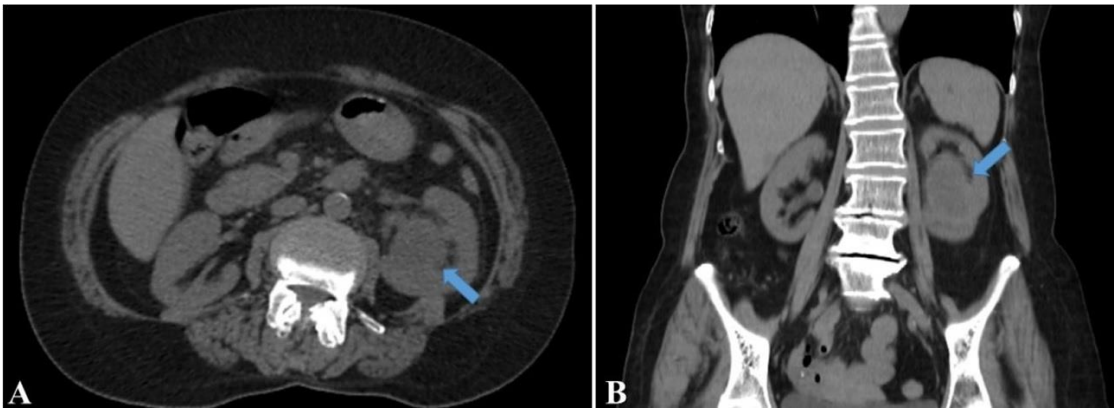

Figure 1: 2.5 cm parapelvic nodular mass containing a cystic-solid lesion in the left kidney in CT imaging (A) Axial Plane (B) Coronal Plane

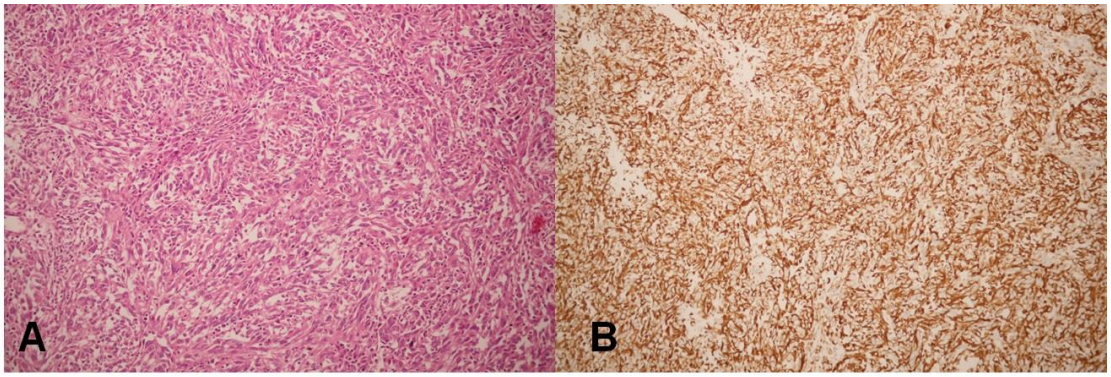

Figure 2: (A) Poorly differentiated sarcomatoid areas. H&E stain, x200 (B) Diffuse and strong vimentin expression in sarcomatoid areas. x200

DICSUSSION

After the bladder and prostate neoplasms, renal tumors are the third most commonly encountered neoplasms of the urinary system (Bray, 2018) and the incidence of renal cancers tends to increase (Dy, 2017). Since RCC develops in the retroperitoneal space, it often does not show any signs until it reaches to the advanced stage. 1-5% of RCCs have sarcomatoid differentiation (de Peralta-Venturina, 2001). Regardless of the RCC subtype, sRCC is associated with a poorer prognosis, poorer oncological outcomes and more aggressive disease biology (Ahrens, 2019). In the present day, the optimal regimens of therapy for sRCC remains unclear. In our case, sRCC was observed to be aggressively progressing. PET-CT scan revealed progression despite the nivolumab treatment.

In a case reported in Japan, an 82 years old men with sRCC completely responded to the nivolumab therapy. After the treatment, the lung metastases in the patient's CT scan had completely disappeared (Tomioka, 2021). Immunohistochemical analysis of the patient revealed that PD-L1 was expressed 25% in tumor positive score. However, our patient was unresponsive to the nivolumab treatment and her immunohistochemical analysis did not contain PD-L1 expression. In another study, which comprises of 77 patients with metastatic RCC who received nivolumab therapy as second or third line treatment, three had complete remission and twenty-seven had partial response. Therefore, the response rate to nivolumab treatment was evaluated as 39%. After initiating the nivolumab therapy, the median progression-free survival was 7 months (Ito, 2022). In a phase 3 study, nivolumab was shown to be superior to everolimus in

response to treatment and overall survival (Motzer, 2015). In a study, which comprises 35 people receiving nivolumab, a 60% response to nivolumab treatment was observed and less than 10% of patients had to discontinue the medication due to its side effects (Rauthan, 2022). Although our patient did not develop any side effects during nivolumab treatment, she did not respond to nivolumab treatment and radiotherapy. In a systemic review and meta-analysis, nivolumab was found to be quite safe in improving recovery and improving overall survival, with only 2% of cases complaining of fatigue (Zhang, 2022). In a study in which the neutrophil-eosinophil ratio of patients with metastatic RCC who received nivolumab treatment was evaluated, it has been shown that low neutrophil to eosinophil ratio has a better prognosis, but the rate of immune-related side effects was high (Gil , 2022).

CONCLUSION

In conclusion, due to the prognosis is poor and progression is rapid in patients with sRCC, staging and imaging should be performed as soon as possible after the pathology results revealed. Afterwards, patients should be treated with a multidisciplinary approach immediately. Despite systemic treatments, the prognosis of sRCC appears to be poor.

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