ABSTRACT

Primary renal angiosarcomas (ASs) are uncommon tumors with poor prognosis. Aetiology is unknown but some unproven risk factors have been described. It is difficult to discriminate these masses from renal cell carcinomas or other renal masses with imaging modalities. Immunohistochemistry plays an important role in the diagnosis. Main treatment protocol for primary renal AS is still controversial and nephrectomy with chemotherapy and/or radiotherapy seems the only treatment option. We state a primary renal angiosarcoma case for its rarity and contribution to literature.

KEY WORDS: Angiosarcoma, primary, renal

INTRODUCTION

Angiosarcomas (ASs) are rare, high-grade malignant tumors, constituting fewer than 2% of all soft tissue sarcomas. They originate from the vascular and lymphatic vessel endothelia. AS may occur primary or metastatic, multicentric or localized. Most of the ASs locate in the skin or soft tissue primarily and also confine solid organs such as lung, liver, and bones. Primary renal ASs are uncommon tumors, and only 71 cases had been reported until today including the case we report. We state a primary renal angiosarcoma case for its rarity and contribution to literature.

CASE REPORT

A 70-year-old male patient was admitted to our clinic with an incidental mass in the right kidney detected in abdominal ultrasonography (USG). In his medical history, there was no other illness except his coronary artery disease diagnosed 8 years ago. His only symptom was lethargy and no abnormal biochemical parameters in his laboratory findings. In his abdominal USG, it was reported that there was a heterogeneous hypoechoic mass lesion, 93 × 91 cm in diameter, exhibiting cystic degeneration, in the inferior pole of the right kidney. Besides, thoracoabdominal computerized tomography (CT) revealed a solid mass lesion of 13 × 12 × 9.5 cm in diameter, with irregular margins, in the same localization that invades right adrenal gland and peritoneum [Figure 1]. A consent form was taken from the patient, and after that right radical nephrectomy, right adrenalectomy, and excision of peritoneal invasion tissue were performed. On histopathological examination, there was a renal mass about 14 × 13 × 10 cm in the renal pelvis and the lower pole, fulfilling renal tissue with necrosis and hemorrhage. The tumor was expanding to the perirenal fat tissue. However, there were anastomosing vascular clefts and wide necrosis areas that suggested neoplasia on microscopic examination [Figure 2a]. Immunohistochemistry (IHC) studies with anti-CD31 [Figure 2b] and anti-CD34 [Figure 2c] staining were positive in neoplastic cells. EMA, pancytokeratin, HMB-45 [Figure 2d], Melan A, and Actin stainings were negative. As a result of histopathological examination, the patient was diagnosed with primary renal AS. After that, the patient was scheduled to receive an appropriate adjuvant chemotherapy protocol. However, he had an ileal obstruction after two courses of chemotherapy with paclitaxel (80 mg/m²). Abdominopelvic CT revealed that there was peritoneal carcinomatosis

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which was not shown in preoperative imaging methods and in histopathological findings. Laparatomy and ileostomy procedure was performed by general surgery. The patient died due to multiorgan failure while he had been kept in the postoperative intensive care unit.

**DISCUSSION**

ASs are rare malignant forms of soft tissue tumors derived from the endothelia. Although they generally derive from the skin and superficial soft tissues, they may also confine organs such as lungs, liver, bones, spleen, heart and large vessels, thyroid, salivary, and adrenal glands. Besides, primary renal ASs are rare than renal AS metastases. Its occurrence is common in the sixth and seventh decades, and men are more affected than women. Omiyale and Carton reported the following results: the median age for primary renal AS was 61 years, and there was male sex predilection and higher left kidney involvement.

Although the etiology is unknown and has not proven any direct relationship with primary renal AS, some risk factors were described in the literature. These include chronic lymphedema, radiation, toxins such as arsenic and vinyl chloride, neurofibromatosis, BRCA1 and BRCA2 mutations, and familial syndromes such as Maffucci, Klippel–Trenaunay, and Stewart–Treves syndrome.

Primary renal ASs do not have a specific clinical presentation. Patients generally present with flank pain, macroscopic hematuria, palpable abdominal mass, anemia, and chronic fatigue. In some cases, tumor may be found incidentally without any symptoms. In our case, the tumor was found incidentally in USG scan and chronic fatigue might be the only symptom.

Solid renal tumors and metastases without any characteristic findings may be determined at CT scans. However, CT technique might be insufficient for AS diagnosis due to virtual similarity between renal cell carcinomas and AS. A recent study suggests that a tangled mesh of signal-void vascular structures in the periphery of the huge mass on a T2-weighted magnetic resonance imaging (MRI) could be a useful MRI finding indicative of a primary renal AS. As a preoperative diagnosis, the option may be fine needle aspiration with CT guidance, but in literature there are only three cases reported.

IHC positivity for endothelial markers such as anti-CD31, anti-CD34, and anti-Factor VIII in histopathological examination is the certain diagnosis for AS. Guan et al. reported that some renal ASs might be derived from renal angiomyolipomas (AMLs). But in their case, the AS cells expressed neither Melan-A nor HMB45, and the immunoprofile of AS clearly differed from that of renal AML. Besides, they suggested that more data would be needed if there was any malignant transformation from renal AML to AS.

In our case, CD31 positivity and HMB45 negativity were determined. Novel data for AS are that due to assignment of synaptophysin-positive staining being >75% in cases, aberrant synaptophysin expression may explain the aggressive clinical behavior. Yet, identification for other markers such as PAX8 and PAX2 may be the future IHC diagnostic methods.

According to the current literature, the best treatment option for primary renal AS still remains unclear, and the most appropriate therapy is radical nephrectomy. Radical nephrectomy is required not only for treatment but also for performing differential diagnosis of renal cell carcinomas. Local recurrences and metastasis are common in primary renal AS either at diagnosis or after radical nephrectomy. Adjuvant radiotherapy and chemotherapy are recommended after surgery. Taxans and bifoamide-based chemotherapy regimens are usually preferred. Zenico et al. reported a median survival rate of 13 months in patients receiving adjuvant radiotherapy and chemotherapy, compared with patients who underwent nephrectomy alone.

These tumors exhibit an aggressive course and poor prognosis. Early metastases are common, and 1-year survival after diagnosis might be achieved in a few patients. The size of tumor at the
time of diagnosis and presence/absence of metastases are the most important prognostic factors for primary renal AS. Prognosis in tumors smaller than 5 cm in diameter is much better than that in those larger than 5 cm. Fortunately, tumor diameter was more than 5 cm in our case.

Iacovelli et al. reviewed 42 cases of renal ASs that had been published in the literature until 2013. They reported that the median survival rate of 5 months and metastatic disease had three-fold increased risk of death compared with nonmetastatic patients. Also, they concluded that chemotherapy had been effective in eligible patients. Omiyale and Carton brought a new review out in 2018 about renal AS in 64 cases that had been reported so far. As a result, they stated that patients with primary renal AS had presented with flank pain (29.6% of patients), hematuria (28.1%), abdominal mass, and weight loss. They noticed that the patients had undergone surgery and then radiotherapy with or without chemotherapy. They also suggested that the masses must have been distinguished from morphologically similar lesions of the kidney due to their highly aggressive pattern and dismal outcomes.

Primary renal AS is a rare tumor with poor prognosis. It is difficult to discriminate this entity from renal cell carcinomas or other renal masses due to no specific imaging modality. The importance of IHC cannot be underestimated in the tumor diagnosis. The main treatment protocol for primary renal AS is still controversial, and further studies and reports are needed.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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