Solitary fibrous tumors (SFTs) are rare mesenchymal neoplasms found areas lining the pleura. First reported in 1931, there have been a total of 55 cases of SFTs of the kidney worldwide. In most cases, SFTs present with hematuria, flank pain, and enlarging abdominal mass. In this case, we report a case of a patient who underwent a radical nephrectomy to remove an SFT of the kidney with compression of the vena cava. This case further expands upon the importance of diagnosing and assessing the aggressive clinical behavior of SFTs during treatment and follow up.

Case report

A 45-year-old Hispanic female presented with moderate right flank pain and a soft right sided abdominal mass that had steadily grown over two months. Upon examination, the patient denied any night sweats, hesitancy, weight loss, fever, chills, decreased force of stream, hesitancy, urgency, nocturia, or enlarged lymph nodes. There was also no rebound or guarding in the abdomen near the mass. The patient denied any night sweats, pain and a soft right sided abdominal mass that had steadily grown over two months. Upon examination, the patient denied any night sweats, hesitancy, weight loss, fever, chills, decreased force of stream, hesitancy, urgency, nocturia, or enlarged lymph nodes. There was also no rebound or guarding in the abdomen near the mass. The patient denied any history of smoking, alcohol, or any other substance abuse. The patient had a surgical history including a hysterectomy and a breast biopsy for suspected breast cancer. The patient was currently on 50 μg/inhalation nasal spray of fluticasone and 10 mg of loratadine for allergies. The patient’s white blood cell count was 4000/μL, and creatinine 0.6 mg/dL were within normal limits. The patient’s blood pressure was also normal at 117/80 mmHg.

As shown in Fig. 1, a CT scan of the abdomen and pelvis revealed a 10.1 × 7.7 × 9.09 cm mass arising from the pararenal fascia of the anterior capsule area of the kidney. Contrast CT of the kidney mass showed delay and heterogeneous enhancement. Subsequent angiography studies showed parasitic vessels of the kidney and from the phrenic artery along compression of the vena cava. The patient did not present with any symptoms from the IVC compression (elevated heart rate, hypotension, or edema). However, given the size and location of the mass, it was uncertain whether the mass was a sarcoma or benign fibrous tumor and a percutaneous renal biopsy was ordered.

Gross examination of the kidney showed no obstruction in either the renal artery or vein. A 10 × 7 × 7 cm firm, fleshy mass was attached to Gerota’s fascia and had a yellow-white, tan, purple mottled appearance. The kidney had dimension of 9 × 4 × 3 cm and showed smooth pink-purple external surfaces with a 6 mm cortex that was unremarkable and sharply distinguished from the medulla. As shown in Fig. 2, the percutaneous renal biopsy showed the mass contained spindle cells suggestive of a spindle cell neoplasm of a SFTs type. As shown in Fig. 3, the diagnosis was confirmed by performing an immunostain, which showed the mass was positive for CD34 and Bcl-2.

The patient was subsequently sent to for an open right radical nephrectomy with resection of the retroperitoneal mass and periaortic and
peri venacaval lymph node dissection using a chevron incision. A radical nephrectomy was performed to remove the mass with minimal blood loss and avoid future complications (AV fistula or pseudoanuersym) to the patient since the mass was densely adherent to the kidney within Gerota’s fascia with intense desmoplastic reaction. A partial nephrectomy would have resulted in a higher risk of bleeding, postoperative urine leak, and increased operative time under anesthesia. Therefore, the decision was made to perform radical nephrectomy.

Upon examination, the SFTs showed no invasion of the renal parenchyma with a benign renal artery, renal vein, and ureteral margin. The kidney and mass peeled easily from the IVC without any adjunctive surgical maneuvers. The periaortic and peri venacaval lymph nodes were determined to be comprised mostly of adipose tissue that was $2.5 \times 2.2 \times 1.2$ cm in size and were determined to be benign. The patient overall tolerated the procedure well without any complications and minimal blood loss (250 cc) with the patient receiving 1 unit of packed red blood cells. No liver or splenic metastasis were observed upon examination. Post-operatively, the patient developed a postoperative ileus. Over several days, the patient’s bowel function returned to normal and was discharged without any further post-operative complications. The patient is scheduled for a follow-up CT scan abdomen/pelvis with IV contrast in 3 months for surveillance, but there have been no clinical signs or symptoms of recurrence to date or any clinical evidence of an incomplete resection to date.

Discussion

Solitary fibrous tumors are rare mesenchymal tumors found in the pleura with only 10%–15% of SFTs become malignant. In histological sections, SFTs show increased cellularity, pleomorphism, increased mitotic activity, necrosis, and hemorrhage. Among the SFTs reported in the literature, 15% were located in the renal capsule, 6% in the pelvis, and 3% in the renal pelvis, while 76% had an unknown site of origin. CT scans of SFTs show variable heterogeneous enhancement, calcifications, and areas of central necrosis. Solitary fibrosis tumors can be classified as strongly or weakly CD34 reactivity. Further immunohistochemical staining with Bcl-2, CD99, and vimentin can also aid in diagnosing SFTs. Specifically, CD34, CD99, Vimentin, and Bcl-2 are positive in SFTs. In this case, we reported a negative for STAT6 in the SFTs, which has not been evaluated for SFTs located in the kidney despite being expressed in most SFTs. Given their rare occurrence, no clear treatment guidelines exist for SFT and little is known whether preoperative biopsy or nephron sparing surgeries can improve the effectiveness of surgical or chemotherapy treatments. In most case reports, SFTs are completely removed given their malignant potential and lack of recurrence after a radical nephrectomy. Further investigation is needed to assess the aggressive clinical behavior of SFTs upon follow up.

Funding sources

None.

Declaration of competing interest

The author reports no conflict of interest.

Acknowledgments

We wish to thank Dr. Kenneth Nugent at Texas Tech University Health Sciences Center for his advice and support writing this manuscript.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2019.101072.

References

1. Xie Z, Zhu G, Cheng L, Liu J, Ye H, Wang H. Solitary fibrous tumor of the kidney. Medicine (Baltim). 2018;97(34), e11911, 2018/08.
2. Fursevich D, Derrick E, O’Dell MC, Vuyyuru S, Burt J. Solitary fibrous tumor of the kidney: a case report and literature review. Cureus. 2016/1–8, 2016/02/11.
3. Demirtas A, Sabur V, Akgün H, Akınsal EC, Demirci D. Solitary fibrous tumor of the kidney: a case report. Case Rep. Urol.. 2013:1–4, 2013.