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Case Report

Successful Surgical Resection of Metastatic Renal Cell Carcinoma to the Inferior Vena Cava and the Right Atrium: A Case Presentation

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ABSTRACT

We describe a 62-year-old woman, a known case of advanced renal cell carcinoma with the extension of the tumor up to the involvement of the inferior vena cava (IVC) and the right atrium (RA). The patient complained of gross hematuria and peripheral edema. Echocardiography revealed near total occlusion of the IVC with a tumor at the site of the orifice of the RA in addition to a mobile mass in the RA protruding across the tricuspid valve. The patient underwent a successful surgical resection of the tumor at the IVC and RA junction under cardiopulmonary bypass. Patient had uneventful recovery and discharged 1 week later. ***(Iranian Heart Journal 2017; 18(2):50-52)***

Keywords: Renal cell carcinoma, Cardiac metastasis, Cardiac surgery

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Renal cell carcinoma (RCC) is a malignancy with one of the poorest prognoses and is often diagnosed at the advanced stage. [1, 2] The most common symptoms and signs of RCC are flank pain, abdominal mass, and gross or microscopic hematuria. [3] The diagnosis is usually made by abdominal ultrasound, computed tomography, and magnetic resonance imaging. [1] In selected cases, especially in earlier stages, radical nephrectomy can be performed. Nonetheless, in the late stage and metastatic disease, surgical resection is not possible and only chemotherapy and radiotherapy can be drawn upon. [2] One of the uncommon manifestations of advanced RCC is the distal extension of the tumor to the inferior vena cava (IVC) and the involvement of the junction of the IVC and the right atrium (RA). In such challenging cases, the patient has severe peripheral edema, hepatic congestion, and ascites. What further exacerbates the situation is that there is considerable controversy surrounding what constitutes the best strategy for this scenario.

CASE PRESENTATION

A 62-year-old woman was referred to the department of cardiovascular surgery of our hospital with a complaint of hematuria and lower extremity edema. She had a history of documented RCC diagnosed 2 years

previously, at which time she was in stage IV with hepatic metastasis (Fig. 1). She had chemotherapy and radiotherapy. In the evaluation of the patient with transthoracic echocardiography, a mass was detected at the IVC and RA junction and there was also a mobile mass (about 2×3 cm) inside the RA. Given the near complete obstruction of the IVC orifice, the patient was candidated for the surgical removal of the mass. Via the median sternotomy approach, heparin was administrated. The complete obstruction of the IVC orifice precluded venous cannulation and femoral cannulation was instead used. After the initiation of cardiopulmonary bypass and aortic clamp and cardioplegic infusion to the aortic root, the RA was opened and the mass at the IVC and RA junction was completely resected and the mobile small mass inside the RA was removed. The patient was thereafter weaned from cardiopulmonary bypass. The postoperative course of the patient was excellent, and she was discharged a week later. At follow-up until the 6th postoperative month, she was in good health without any evidence of tumor recurrence on echocardiography.

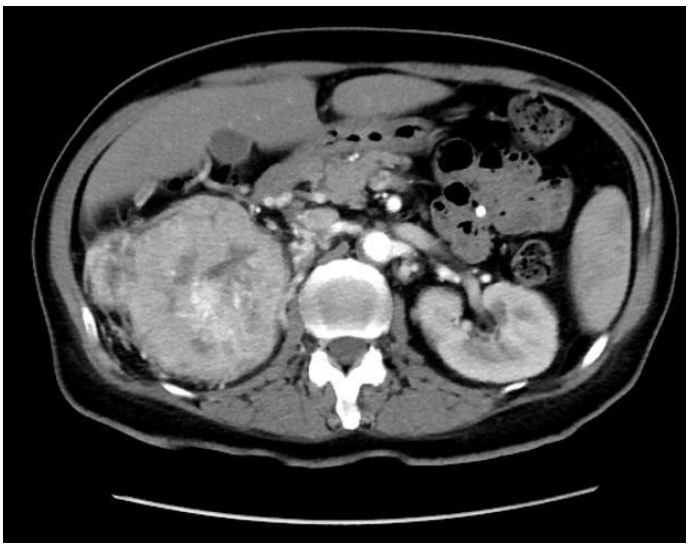

Figure 1. Computed tomography scan image of the Rt side renal cell carcinoma.

DISCUSSION

Most cardiac tumors (>90%) are secondary and metastatic. While the majority of the primary cardiac tumors such as cardiac myxomas are benign, most secondary cardiac tumors are malignant metastatic tumors. [4, 5] The most common primary tumors with metastatic spread to the heart are lung cancer, breast cancer, leukemia, and melanoma, followed by RCC. [6] Cardiac involvement by metastatic disease can be completely silent and asymptomatic or clinically symptomatic depending on the site of the involvement. Overall, the most frequent symptom of cardiac metastasis is hypertension; nevertheless, in the metastatic involvement of the heart by RCC, the most common presentation is the occlusion of the IVC and RA junction, which is symptomatic with swelling in the lower extremities. [7, 8] Advanced RCC with cardiac metastasis, which has proved controversial in the literature, presents a challenge to cardiac surgeons. Curative surgical resection includes radical nephrectomy and the reconstruction of the IVC can be performed only in selected cases in whose metastatic workup, there is no

sign of major organ involvement—especially lung and hepatic metastasis—and relatively long-time survival can be expected. [9, 10] In other cases, only palliative surgical resection (as was the case in our patient) or non-surgical therapeutic regimen can be employed. Although today the medical community has evolved chemotherapy for advanced and metastatic RCC, the median long survival of metastatic RCC is only 6 to 12 months and long-time survival (5 y) can be expected in only 9%. [5, 11] The late stage and metastatic disease of RCC is resistant to other options of no operative strategy consisting of hormonal therapy and radiotherapy. [10-12]

CONCLUSIONS

Cardiac surgeons face a great deal of controversy surrounding the management of advanced RCC with cardiac metastasis. Curative surgical resection includes radical nephrectomy and only in selected cases can the reconstruction of the IVC be undertaken.

Conflict of Interest: None.

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