Isolated late recurrence of renal cell carcinoma in the inferior vena cava

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The occurrence of an isolated late recurrence of renal cell carcinoma within the inferior vena cava (IVC) is a rare event. We present a case of a 55-year-old patient with recurrence in the IVC more than 3 years following her initial nephrectomy. The asymptomatic presentation of this patient with recurrent disease emphasizes the importance of close, long-term surveillance.

Key Words: renal cell, inferior vena cava, recurrence

Introduction

While patients with renal cell carcinoma (RCC) involving the inferior vena cava (IVC) have been reported to have a higher rate of metastasis at the time of diagnosis (63% versus 25%) and a recurrence rate as high as 40% within 6 months,[1] the recurrence of RCC within the IVC is a relatively rare event. We present an asymptomatic 55-year-old patient who was found to have IVC recurrence more than 3 years following her initial nephrectomy. This case illustrates the need for long-term follow-up in patients with this disease.

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Case presentation

A 55-year-old woman had undergone a right radical nephrectomy with removal of tumor thrombus from her inferior vena cava (IVC) in July 1999, Figure 1. The tumor thrombus had extended to the level of hepatic veins. The patient underwent embolization of the right kidney with right radical nephrectomy and caval thrombectomy. Pathologic review revealed a Fuhrman grade III renal cell carcinoma of the clear-

Figure 1. Right renal tumor with tumor thrombus in the right renal vein and inferior vena cava (7/1999). A small portion of the thrombus extends into the left renal vein.

cell type measuring 6.5 centimeters in maximum diameter with invasion into, but not through, the renal capsule. All lymph nodes removed were benign.

The patient was closely followed with a complete blood count, serum biochemistry, liver function tests, renal ultrasound and chest radiograph at regular intervals. CT scans of the abdomen and pelvis were performed at 6, Figure 2, 24 and 36 months. An additional CT scan at 42 months revealed the presence of a heterogenous, enhancing mass in the infrahepatic inferior vena cava,Figure 3. There was no evidence of disease elsewhere as documented by CT scan of

Figure 2. Collapsed inferior vena cava 6 months after right radical nephrectomy and vena cava thrombectomy (1/2000).

Figure 3. Interval development of heterogeneous, enhancing mass expanding the IVC 41 months after initial surgery (12/2002).

the thorax and PET scan. The serum creatinine remained about 1.6 mg/dl post-operatively since July 1999. In March 2003 the patient underwent resection of the tumor with removal of the inferior vena cava. The vena cava was totally occluded and significant collateral flow allowed ligation of the left renal vein and resection of the IVC from below the hepatic veins down to the bifurcation of the iliac veins. The pathology of the intracaval mass was compatible with clear-cell type renal cell carcinoma. The patient's serum creatinine level declined to 1.1 mg/dl post-operatively, and she was discharged to home after an uneventful post-operative course.

Discussion

Involvement of the IVC occurs in approximately 4% to 15% of renal cell carcinoma (RCC).[2] There is a 2 or 3 to 1 preponderance of right renal cancer involving the IVC compared to lesions on the left side.[3,4] For tumors with IVC involvement that are otherwise confined to the kidney, 5-year survival after successful surgical removal has been reported to be between 18% and 68%.[5] Patients with RCC involving the IVC have been reported to have a higher rate of metastasis at the time of diagnosis (63% versus 25%) and a recurrence rate as high as 40% within 6 months.[1] While renal cell carcinoma may recur at any location in the body, recurrence within the inferior vena cava is rare with less than five cases reported.[6-9]

The prognostic significance of renal vein or IVC wall invasion with RCC has been unclear.[10] However, the importance of complete resection of thrombus is evidenced by 5-year survival ranging from 68% to

17.5% for patients with complete thrombus removal versus those with incomplete removal, respectively.[10] Venacavotomy and tumor thrombus removal may be accomplished successfully in most instances where the tumor is freely floating. If the tumor thrombus invades less than one third of the circumference of the IVC, the cavotomy may be closed primarily. In cases involving more than one third of the circumference of the IVC, a pericardial or synthetic patch graft can be used to close the defect in the wall.[4]

Resection of the suprarenal IVC and ligation of the left renal vein has been well documented.[11] The left renal vein commonly receives left adrenal, gonadal and lumbar tributaries which provide a means of collateral drainage after ligation. The patient in this case had total chronic obstruction of the IVC with well-developed collateral drainage. Patients with incomplete obstruction of the IVC and poorly developed collateral circulation require replacement of the IVC with a synthetic graft to avoid the risks of major venous insufficiency and renal failure.[12]

Conclusion

This case demonstrates the rare occurrence of an isolated late recurrence of renal cell carcinoma within the inferior vena cava documented on serial imaging. The asymptomatic presentation of this patient with recurrent disease emphasizes the importance of close, long-term surveillance. □

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