Isolated right renal hilum mass with severe adhesion to the renal vessels and Vena Cava in a patient with single functioning kidney: A case report

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ABSTRACT

We report a case of a single kidney patient with an isolated renal hilum mass which is accompanied by severe vascular involvement. A 56-year-old woman with right flank pain was referred to our center. Ultrasound and CT scan showed a hypoechoic and solid mass in the right kidney pedicle. The renal mass biopsy showed a clear cell carcinoma. The patient was scheduled for surgery and the isolated mass was removed. To the best of our knowledge, this is the first case of renal hilum mass of Renal Cell Carcinoma (RCC) origin that had no connection to kidney parenchyma.

1. Introduction

The kidney is an organ whose main functions are the removal of metabolic wastes and regulation of the amounts of fluid and electrolytes balance in the body. Kidney masses are among the kidney-related diseases, which show themselves in different forms including renal cell carcinoma (RCC). RCCs are rare kidney masses known as kidney malignancies in more than 90% of cases, and the clear cell RCC (ccRCC) is the most common type, which has been found to be associated with a high mortality rate over the past two decades.

2. Case report

A 56-year-old single-kidney woman who was under treatment for high blood pressure was referred to our center due to having pain in her right flank but with no urinary symptoms. She had a history of nephrectomy of the left kidney due to a renal mass for which no pathological documents were available. The results of all the laboratory tests were normal. Ultrasound and computed tomography (CT) scan showed a single hypoechoic mass with dimensions of 35 * 70 * 40 mm in the anterior part of the right renal hilum that had spread to the para-aortic region (Fig. 1). The interpretation of CT scan images also indicated that the mass of the right kidney was probably a large lymph node of metastatic origin, but the other parts of the abdomen were normal. The chest X-ray was also normal. The mass sampling under ultrasound guidance showed that it was the cc RCC.

The patient was scheduled for surgery. The abdominal wall was opened with the right anterior subcostal incision and the mass was observed in the umbilicus of the kidney with severe adhesion to the anterior and lateral parts of the Vena Cava. It also covered the main vessels of the right kidney. At first, we carefully released the mass from the Vena Cava, then cautiously separated its adhesion to the renal artery and vein. Finally, the mass was completely isolated and removed intact (Figs. 2 and 3). We investigated all parts of the abdomen and did not find any other pathology. The pathological examination of the mass showed a clear cell subtype of RCC. The CT scan at six-month follow up was normal and did not show any recurrence or metastasis.

3. Discussion

Most RCCs have been presented as the clear cell subtype of this malignancy. In other words, the most common type of histology of these tumors is the ccRCC. Accordingly, the pathological and histological results of our case were consistent with the results from some similar studies. Numerous risk factors, including high blood pressure, smoking, and obesity play roles in the development of this disease.

In this case report, the patient had a history of hypertension and nephrectomy in the past 20 years, which could be considered as the reasons for the development of this complication. We performed laparotomy and removed the mass without any damage to the tissue and renal hilum vessels. Several studies have shown that damage to the renal vessels is one of the most common injuries during performing radical nephrectomy in the treatment of RCC. Fortunately, no damage occurred to the kidney tissue and the main vessels around the mass in

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Fig. 1. CT scan of renal hilum mass.

Fig. 2. Renal pedicle after removing the mass.

Fig. 3. The intact removed mass.
In the past, total nephrectomy was a common surgical procedure applied to patients diagnosed with RCC of the renal hilum, which was replaced by partial nephrectomy in most cases. In our case, since there was no connection between mass and renal parenchyma, we only removed the mass.

The standard treatment used for removal of renal hilum masses was radical or partial nephrectomy. In all the reported cases, renal hilum masses were attached to the kidney, whereas in our case there was no connection between the renal hilum mass and kidney tissue. One hypothesis for the growing of this mass may be metastasis from a previous left nephrectomy to the right renal hilum lymph node, but despite our request, the pathologist did not find any evidence of lymph node histology in the specimen. In addition, there were no other findings like large lymph nodes or metastasis in surgery or follow up to confirm it. To the best of our knowledge, this is the first reported case of isolated renal hilum RCC in a solitary kidney.

Some patients with renal mass have complications after surgery such as wound infection, renal dysfunction, and sometimes heavy bleeding with low hemoglobin levels, which eventually leads to total nephrectomy. None of these complications were observed in our patient, which could be due to timely diagnosis, determining the exact location of the tumor, and high accuracy in performing the surgery.

4. Conclusion

Since the clinical signs of renal hilum tumors are limited, early diagnosis and surgery are the main treatments for these patients. Precise surgery and prevention of damage to the surrounding vessels and tissues are considered as the basis for the treatment of such diseases.

References

1. Kabaria R, Klaassen Z, Terris MK. Renal cell carcinoma: links and risks. Int J Nephrol Renovascular Dis. 2016;9:45.
2. Capitanio U, Bensalah K, Bex A, et al. Epidemiology of renal cell carcinoma. Eur Urol. 2019;75(1):74–84.
3. Meyer AR, Allaf ME, Gorin MA. Epidemiology and Risk Factors of Renal Cell Carcinoma. Diagnosis and Surgical Management of Renal Tumors: Springer; 2019:1–11.
4. Hua Y-B, Li X, Wang D-X. Prevalence and risk factors of myocardial and acute kidney injury following radical nephrectomy with vena cava thrombectomy: a retrospective cohort study. BMC Anesthesiol. 2021;21(1):1–13.
5. Predictive factors for recurrence after complete metastasectomy in patients with metastatic renal cell carcinoma in the targeted therapy era. In: Takagi T, Fukuda H, Ishihara H, et al., eds. Urologic Oncology: Seminars and Original Investigations. Elsevier; 2020.