A case of renal schwannoma

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ABSTRACT

The patient was referred to our department from neurosurgery for close examination of a renal mass that had been present in the lower pole of the kidney for approximately 2 years. Retrograde Pyelography and Ureteroscopy showed no obvious neoplastic lesion in the renal pelvis. Therefore, Percutaneous renal tumor biopsy was performed. The pathological result was Schwannoma. The patient was followed up for 1 year after the biopsy. No progression was observed for approximately 3 years after the renal mass was first discovered. Because renal schwannomas are extremely rare, we report this case with a literature review.

1. Introduction

Schwannomas are benign tumors arising from Schwann cells of peripheral nerves. It is estimated that less than 1% of all schwannomas occur in the retroperitoneum, of which renal schwannomas are rare. Although usually benign, it is difficult to differentiate from epithelial tumors such as renal pelvis carcinoma and renal cell carcinoma, which are often identified after surgical treatment.

Reports of schwannomas arising in the kidney are rare, with only about 39 cases worldwide. In this article, we report our experience with renal schwannomas, including a review of the literature.

2. Case presentation

He is a 57-year-old man. He had neurofibromatosis type 1 and postoperative lumbar and thoracic schwannomas. He was referred to our department from the Department of Neurosurgery for a close examination of a renal mass that had been present in the lower pole of the kidney for approximately 2 years. Dynamic CT of the abdomen revealed a 16 mm large tumor with weak contrast and distinct borders replacing the renal calyx in the lower pole of the left kidney (Fig. 1). Retrograde Pyelography showed no obvious contrast loss in the renal capsule, and ureteroscopy revealed only smooth mucosa and no neoplastic lesion. Therefore, tumor from the urothelium was ruled out, and a percutaneous renal tumor biopsy was performed to confirm the diagnosis of a submucosal tumor. Biopsy pathology showed bundles of spindle-shaped cells on HE staining with oval to cigar-shaped nuclei. Immunostaining was negative for α-SMA, desmin, Melan A, CD34, neurofilament, neu N, synaptophysin, 3% positive for Ki-67, and positive for S-100, leading to a diagnosis of schwannoma (Fig. 2). Routine CT scans were performed, and the patient has been followed up for 1 years after biopsy and approximately 3 years after the renal mass was first discovered, with no evidence of progression.

3. Discussion

Schwannomas are benign tumors arising from Schwann cells of the peripheral nerves, usually appearing in the head, neck, or extremities; in 1995, Phillips et al. first reported a schwannoma arising in the renal pelvis. Neurilemmomas of retroperitoneal origin are rare, with some reports suggesting that less than 1% of all schwannomas occur in the retroperitoneum.

Histologically, Antoni A and Antoni B types are mixed. Antoni A type is a dense arrangement of elongated tumor cells, with nuclei arranged in a fenestrated, cord-like or spiral pattern and Verocay bodies with parallel nuclei surrounding cytoplasmic projections. Antoni B type refers to an edematous histological structure with coarsely arranged tumor cells and mucous degenerated stroma. The diagnosis of schwannoma requires a positive S-100 protein and the absence of epithelial markers, melanosome-associated antigen, smooth muscle-specific actin, e-kit, CD34, and bcl2.

Contrast-enhanced CT scan shows heterogeneous contrast within the...
lesion, with prolonged contrast at the margins due to internal fibrous components and membranes. MRI shows isointense on T1-weighted images and hyperintense on T2-weighted images. With gadolinium contrast, there is marked homogeneous enhancement in the solid portion of the tumor on T1-weighted images, and the intensity difference on T2-weighted images may be related to differences in tissue structure.

However, the diagnosis of schwannoma is difficult to make with imaging alone and requires microscopy. Worldwide, 39 cases were reported, 34 by nephrectomy and 5 by partial nephrectomy. Of these, 4 were diagnosed as malignant. It has been reported that schwannomas that meet the following conditions should be considered malignant: (1) tumor diameter greater than 5 cm, (2) cell atypia, nuclear division, or infiltrative growth, (3) intratumoral hemorrhage or necrosis, and (4) Ki-67 positivity 5–65%, which increases the likelihood of malignancy. In the present case, none of the above conditions apply, and malignancy is unlikely.

In the past, schwannomas have been treated surgically to differentiate them from other benign tumors such as renal pelvis tumors and renal tumors. Recently, however, Percutaneous renal tumor biopsy has been recommended for small renal tumors, and in this case, we were able to diagnose schwannoma by Percutaneous renal tumor biopsy. To our knowledge, this is the first case in which a renal schwannoma was diagnosed by Percutaneous renal tumor biopsy and followed up without surgery. We hope that more cases will be treated conservatively by Percutaneous renal tumor biopsy in the future. However, although schwannomas are essentially benign tumors, careful follow-up is necessary because malignant transformation has been reported in a few cases.

4. Conclusion

We report a case of renal schwannoma, a benign tumor. Since
Percutaneous renal tumor biopsy is recommended for small-diameter renal tumors, conservative treatment is likely to increase. Since there are no cases of renal schwannoma with follow-up, more cases should be collected and analyzed in the future.

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**Declaration of competing interest**

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