A large Number of Metastatic Subcutaneous Nodules: A Complication of Percutaneous Biopsy for Atypical Renal Cell Carcinoma

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A -68year-old man underwent ultrasound-guided needle biopsy of a suspicious renal mass. Just two weeks later, a large number of subcutaneous nodules was found in patient's chest-back, neck and axilla. pathology analysis was found to be metastatic subcutaneous nodules. These features suggest that tumor seeding have occurred during needle biopsy. Despite needle tract seeding is a rare event, this rare complication should be taken into consideration before contemplating its use in a patient.

Keywords: renal biopsy; renal cell carcinoma; tumor seeding

INTRODUCTION

Improved imaging technology has led to an increase in the diagnosis of renal masses and allow urologists to propose a management plan without biopsy in many cases. However, we still need biopsy if imaging cannot determine the nature of the tumor. In this case report, we describe the complication of tumour seeding in a patient with atypical renal cell carcinoma who underwent percutaneous biopsy. Despite needle tract seeding is a rare event (the risk is reported to be less than 1:10000), clinicians should inform patients of this rare complication especially those who are candidates for alternative treatment modalities.

CASE REPORT

A 68-year-old male was admitted due to hematuria and left back pain for 2 weeks. Clinical imaging revealed a renal tumor in the left kidney. In order to better treatment, he was referred to our hospital. An abdominal computed tomography scan was then performed to further characterise this lesion, which showed a 7.7*6.2mm solid mass in the left kidney and heterogeneous density in enhanced scan. Fortunately, lymphadenopathy (swollen lymph nodes) were not found in abdominal cavity and retroperitoneum (**Figure1a)**. Beyond that, chest X-ray showed suspicious area in the right side of hilus pulmonis. The patient's case was discussed at the urology weekly meeting. Treatment options discussed were surgical removal and renal biopsy. Considering the patient had an atypical re-

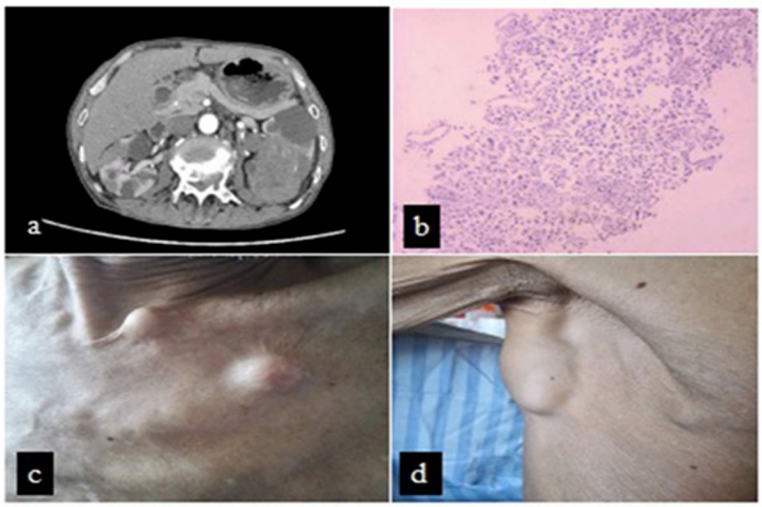

Figure 1. CT scan showed a 6.2*77 mm solid mass in the left kidney and heterogenous density in enhanced scan **(a)**. Pathology analysis of the biopsy specimen was clear cell type of renal cell carcinoma **(b)**. Subcutaneous nodule in the chest **(c)** and right axilla **(d)**.

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nal mass and most likely was a renal lymphoma which were sensitive to chemotherapy, we finally opted for ultrasound-guided biopsy of the lesion after communicating with patient and family members. First, the contrast agent (Sonovue, 2ml) was injected intravenously. The left renal mass was heterogeneous density enhanced. An 18G biopsy needle (HS Hospital Service S. p. A. Specifications: TOP CUT M 18G×200MM) was used to take two samples of the lesion, and the sample length was 2cm. Unfortunately, we did not use a coaxial needle technique. There were no immediate complications. Pathology analysis of the biopsy specimens was clear cell type of renal cell carcinoma (**Figure1b**). After that, the patient readmitted for surgical removal two weeks later. To our astonishment, there were a large number of subcutaneous nodules in the chest-back, neck and axilla (Figure1c, d). Renal cell carcinoma seeding along a percutaneous biopsy tract was the first diagnosis. Given this finding, the patient underwent a subsequent subcutaneous nodules resection and pathology analysis was found to be metastatic subcutaneous nodules, thereby confirming tumour tract seeding. We recommend that patients use targeted drugs (Sunitinib or Sorafenib). However, in china, targeted drugs are so expensive that patients can't afford them. Finally we took immunotherapy. Interleukin-2(IL-2) , 200MIU, hypodermic injection, three time a week(Monday, Wednesday, Friday). The patient gave up after 2 weeks of treatment. Because the patient was in poor condition, the metastatic lesion was not treated. Unfortunately, despite additional treatment, the patient died from this disease two months after initial diagnosis.

DISCUSSION

Theoretically, preoperative biopsy could saving patients from the unnecessary surgery and reducing burden on surgical services. But now, many clinicians are still reluctant to use renal biopsy in the diagnostic investigation of renal masses, and almost 55.9% of urologists never obtain a preoperative biopsy[1]. This was due to the risk of false-negative results and tumor seeding. In this case, we opted for renal biopsy was based on the considering of the patient most likely with a renal lymphoma which were sensitive to chemotherapy. The discovery that tumour cells had seeded into the subcutaneous during the biopsy procedure was unfortunate. Renal cell carcinoma seeding associated with diagnostic biopsies to be a very rare event(< 0.01%) with only a few reported cases on this[2]. To minimise the risk of seeding, several factors should take into consideration such as needle calibre, number of punctures, tumour grade and the use of specialised techniques.

First of all, along with the enlargement of needle circumference, the area of defect on the surface of the tumor was also increased. Therefore, in theory, a larger-size needle would increase the risk of seeding. But in previous study, tumor seeding has been reported using needles size from 14-gauge to 25-gauge, and it is difficult to determine the relationship between needle size and the risk of tumor seeding[2]. Second, along the same lines, as the number of punctures increased, the risk of seeding increased. In our case, two passes were made with the biopsy needle which could have contributed to the increased risk of tumor seeding. But there are too few cases to establish a firm relationship between seeding and the number of punctures. Thirdly, many urologists think that the grade of tumour may also play an important role in seeding. In our case, pathology analysis was clear cell type of renal cell carcinoma with poor differentiation. Instead, same clinicians have reported seeding in RCC have been low-grade type. They speculated that the possible explanation is that lower grade tumour cells can survive longer in the blood or clot tract induced by the needle, due to its lower metabolic requirements. But this standpoint has not been tested so far in clinical trials. Finally, several techniques, such as coaxial catheter system, have been advocated to minimise the risk of seeding. This technology allow multiple passes through the mass with only one pass through the surrounding normal tissue, which reduces the risk of bleeding as well as tumour seeding[3]. Besides, CT-guided biopsy could be advocated when visualisation is difficult with ultrasound.

Although tumour seeding to be a very rare event, but some studies indicated that tumour tract seeding is underreported. One version hold that most pathologists don't actually go through the overlying fat of the renal mass as well as most surgeon do not mark the puncture site for the pathologists. This caused difficulty to find seeding of tumour along a needle tract[2]. Beyond that, the tumor could theoretically seed into skin, subcutaneous tissue and muscle which can not be found soon after surgery. This delayed presentation may lead to poorer prognosis[4].

CONCLUSIONS

Tumor seeding following renal tumor biopsy is a rare event but may be under-reported. Appropriate patient selection and suitable biopsy technique should be made to minimise the risk of this complication.

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CONFLICT OF INTEREST

The authors have no conflicts of interest.

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