Hydronephrotic Kidney Previously Treated for Tuberculosis: Rare Primary Squamous Cell Carcinoma of Renal Pelvis Diagnosed by Fine-needle Aspiration Cytology

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Abstract

Primary squamous cell carcinoma (SCC) of the renal pelvis is a very rare tumor often associated with renal calculi and chronic infections. There are only a few articles in literature which report renal pelvis SCC in kidneys treated for renal tuberculosis, diagnosed after nephrectomy. We report the case of SCC in a hydronephrotic kidney previously treated for tuberculosis, diagnosed by ultrasound (US)-guided fine-needle aspiration cytology (FNAC), prior to core biopsy and nephrectomy. Our report highlights the utility of FNAC and the need for a careful search for renal collecting system tumors, in patients previously treated for renal tuberculosis.

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Introduction

Primary tumors of the renal collecting system are rare, accounting for only 4–5% of all urothelial tumors. Primary squamous cell carcinoma (SCC) of the renal pelvis is a very rare tumor accounting for only 0.5–0.8% of malignant renal tumors. SCC is often associated with chronic renal calculi and chronic infections. This highly aggressive tumor with poor outcome is usually detected at advanced stage.

Case presentation

A 62-year-old male patient presented with pain and a swelling in the right lumbar region and a history of intermittent fever for a 6 months. He was treated for pulmonary tuberculosis 32 years and for renal tuberculosis 9 years, prior to his presentation.

Laboratory investigations showed an iron-deficiency anemia [red blood cell count was 3.09 × 1012/L (reference range 4.34–5.72 × 1012/L)], hemoglobin was 85 g/L (reference range 138–175 g/L), serum iron (Fe) was 5 µmol/L (reference range 11–32 µmol/L), unsaturated iron binding capacity (UIBC) was 9 (reference range 25–54 µmol/L), Fe/UIBC was 0.14 (reference range 0.20–0.55]), leukocytosis [white blood cell count was 15.97 × 109/L (reference range 3.3–9.7 × 109/L)], and an elevated C-reactive protein (CRP) level [CRP was 143.1 mg/L (reference range <5 mg/L)]. Serum kidney function tests and urine analysis were normal.

Ultrasound (US) showed a huge hydronephrosis of the right kidney filled with echogenic material with the wall calcifications and a huge predominantly hypoechoic mass of approximately 12 × 10 cm in size, in the central portion of the kidney. There were no stones in the right kidney.

A post-contrast computerized tomography (CT) scan of the abdomen revealed a huge, non-functioning, hydronephrotic right kidney, with the upper pole calcification, filled with a dense liquid content and a predominantly cystic mass of approximately 12 × 10 cm in size, located in the renal pelvis (Figs. 1 and 2). Left kidney was normal.

US-guided fine-needle aspiration cytology (FNAC) was performed. The smears showed a large amount of necrotic debris and blood, acute inflammatory cells, and a few single epithelial cells in a background. There were a lot of anucleate squames and single dispersed pleomorphic tumor cells with large, irregular, achromatic nuclei and abundant, basophilic, well demarcated cytoplasm. According to the cytomorphology a diagnosis of squamous cell carcinoma was established (Fig. 3).
SCC was confirmed on histology samples obtained with US-guided core biopsy. Right radical nephrectomy was done, and final histological diagnosis was SCC.

Discussion

Pure primary SCC of the renal pelvis is rare, it is more frequently reported in the bladder and male urethra than in pelvis. Preoperative recognition of SCC is very difficult, since the symptoms will be obscured by stone or infection presence. The patients usually present late with extensive local infiltration, making surgical resection difficult.

Chronic irritation and infection induce changes in the epithelial cells of the renal collecting system and lead to metaplasia, leukoplakia and neoplasia. The incidence of co-existing renal stone was reported in a wide range between 18% and 100%.

Bindra et al, presented a case of SCC associated with renal calculi diagnosed on urine cytology, followed by US-guided FNAC of the lump.

We report the case of SCC in a hydronephrotic kidney previously treated for renal tuberculosis, diagnosed prior to core biopsy and nephrectomy, emphasizing clinical utility of FNAC. According to a previous case, the cytology results are comparable to surgical pathology. FNAC can provide us with an accurate diagnosis, which is confirmed in this case.

SCC is highly aggressive tumor with the poorest prognosis among histological subtypes of renal pelvis tumors, with a median survival of 3.5 months. That points to the need for a careful examination with imaging modalities like contrast enhanced CT.

Conclusion

SCC should be included in the differential diagnosis when evaluating a renal mass that is associated with chronic inflammatory conditions (including tuberculosis) without renal stones. Suspicious changes should undergo FNAC or biopsy.

Conflict of interest

The authors declare no conflict of interest.

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