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CASE REPORT

Squamous cell carcinoma of the renal pelvis infiltrating the kidney: rare and unusual histopathological diagnosis of pyonephrosis

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Squamous cell carcinoma of the renal pelvis infiltrating the kidney is an extremely rare entity. The preoperative diagnosis is usually not evoked because of its rarity and non-specific clinical and radiological characteristics. Most patients are diagnosed at an advanced stage and have a poor prognosis. Radical nephrectomy is the mainstay of treatment.[1] We are reporting a rare case of malignant tumour of the kidney (squamous cell carcinoma) mimicking a pyonephrosis on lithiasis.

Keywords: squamous cell carcinoma, histopathological diagnosis, pyonephrosis

Clinical case

This case concerns a 62-year-old woman followed for diabetes, on insulin, and hospitalised at the emergency department for pyonephrosis on lithiasis (Figure 1). The symptomatology was marked by a febrile left loin pain associated with irritative lower urinary disorders (burning micturition). She was treated by percutaneous nephrostomy with antibiotic therapy and rehydration. Seven weeks after the acute infectious episode, a nephrectomy was performed. On macroscopic examination, the surgical specimen weighed 659 grams and measured 15 x 12 x 5 cm. The parenchyma was of a firm, white-beige consistency and was the site of haemorrhagic and necrotic changes. The cavity was occupied by a suppurated collection and several stones, the largest of which measured 3 x 0.5 cm. The histological examination showed a renal parenchyma destroyed by invasive squamous cell carcinoma proliferation. The cells were polygonal and joined showing moderate cyto-nuclear atypia and mitotic figures. Carcinomatous nuclei were sometimes centred on horny globes. No urothelial component was seen (Figures 2 and 3). The histological diagnosis of moderately differentiated and invasive squamous cell carcinoma of the pyelo-calicial cavities destroying the kidney was therefore made. A postoperative thoraco-abdomino-pelvic CT scan did not indicate any metastasis and the renal compartment was free.

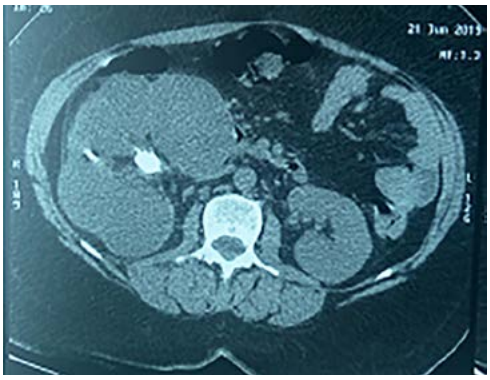

Figure 1: Scan image showing a right kidney with several pockets associated with destruction of the parenchyma on lithiasis

Discussion

Cases of pyonephrosis revealing a squamous cell carcinoma of the renal pelvis infiltrating the kidney are seldom described in the literature. Based on observation, we will discuss the different aspects of this rare entity with the data in the literature.

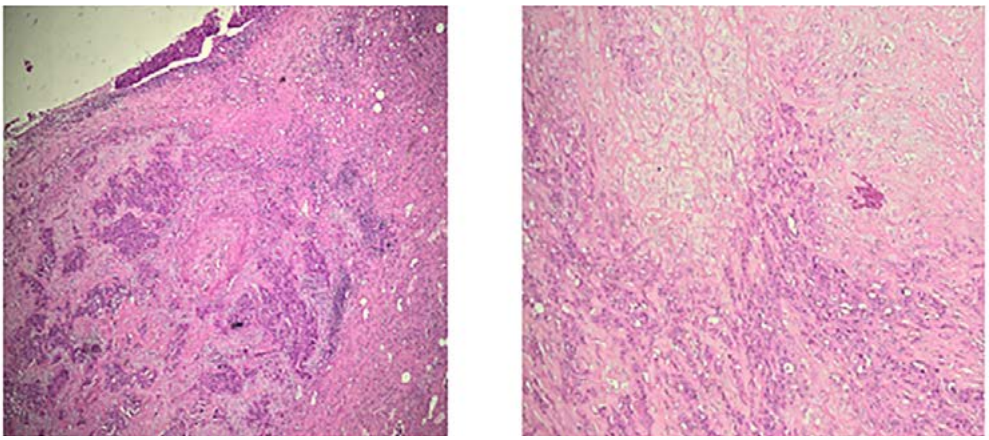

Figure 2: Infiltration of the kidney by squamous cell carcinoma proliferation (X 40 and X 100)

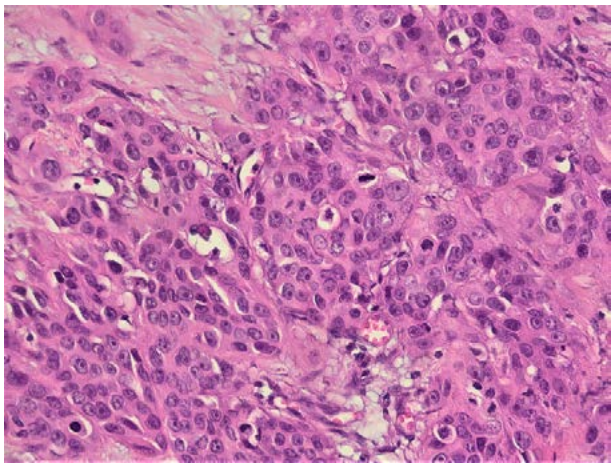

Figure 3: Contiguous polygonal cells with moderate cyto-nuclear atypia and figures (X 400)

In order of frequency, the most frequent malignant renal tumours are clear cell carcinoma, followed by papillary carcinoma and chromophobic carcinoma. Squamous cell carcinoma is rare with an estimated incidence of 0.8%.[2] Risk factors include kidney stones, chronic infections, certain chemicals, radiotherapy and percutaneous nephrolithotomy.[3] Females are predominantly affected, and the most affected age group is between 50 and 70 years of age.[4] We report an observation in a 62-year-old patient. As an identified risk factor, our patient was a carrier of lithiasis which was complicated by pyonephrosis.

The occurrence of squamous cell carcinoma in this context is secondary to metaplasia due to chronic irritation of the urothelium.[5] In our case, the presence of lithiasis was responsible for the chronic irritation of the urothelium.

It can manifest as haematuria, loin pain and kidney mass.[6] Squamous cell carcinoma of the renal pelvis or kidney can occur in several forms. In our case, it was pyonephrosis. Pyonephrosis is a suppurative infection of the upper urinary tract due to an obstruction of the ureter. It is usually associated with suppurative lesions of the renal parenchyma and loss of kidney function.[7] The main clinical manifestation encountered in our patent was febrile lumbar pain with irritative urinary symptoms. Cases of skin invasion[8] or renal cyst[9] revealing a squamous cell carcinoma of the renal pelvis have been reported. In our case, it was pyonephrosis.

Imaging techniques do not allow specific features to be defined in favour of a squamous cell carcinoma of the pelvis or kidney. The lesions described are not specific such as tumour, calcification or hydronephrosis.[5] In our patient, the CT scan only described the lesions in favour of pyonephrosis on lithiasis; the suspicion of squamous cell carcinoma was not raised. The diagnosis was histopathological, the fundamental character being the presence of squamous cell carcinoma differentiation.[10] In fact, histologically the cells were polygonal, joined with the carcinomatous nuclei, sometimes centred on horny globes, and there was squamous differentiation throughout the tumour, contrary to the squamous inflections frequently observed in urothelial carcinomas.[11] An intraepithelial squamous cell carcinoma component indicated the primitive character of the tumour.[6] The lesions described in our case were typical: parenchymal destruction by invasive carcinomatous proliferation with squamous cell carcinoma differentiation, joined polygonal cells showing moderate cyto-nuclear atypia and mitotic figures, and centred carcinomatous nuclei of horny globes.

The treatment focused on nephrectomy or nephrourectomy, with cisplatin in case of metastases.[12] Given the initial hypothesis (pyonephrosis), our patient underwent nephrectomy. On histology, the ureteral margins were healthy and there were no secondary foci in the extension assessment performed. We concluded that it was a localised form, an adjuvant treatment was therefore not indicated.

The tumour was characterised mainly by local extension.[2] Unlike other urothelial carcinomas, there was no ureteral dissemination.[13] Node metastases were less frequent, they were rather bony, pulmonary or hepatic.[14] However, the prognosis for these tumours remains poor, with an average survival of seven months and a five-year survival rate of no more than 10%.[15] Approximately two years after diagnosis, the patient has a performance status of 1 without any sign of recurrence or evolution.

Conclusion

Squamous cell carcinoma of the renal pelvis or kidney is a rare entity with a non-specific presentation. Its diagnosis is histopathological but should be considered in any elderly patient with predisposing factors, including kidney stones and chronic infections. Given its aggressive nature, treatment should be as ablative as possible. Post-nephrectomy attention for pyonephrosis should be paid to the histological type and the condition of the resection margins.

Conflict of interest

We hereby declare that no conflict of interest is involved in this article.

Ethical approval

In accordance with our centre's policy, the patient's consent is not required. This case remains anonymous: no identification is possible.

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