

A case of both clear and papillary renal cell carcinomas in the left kidney

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KEY WORDS

kidney ► carcinoma ► renal cell ► renal cell carcinoma ► clear cell carcinoma ► papillary cell carcinoma

ABSTRACT

We present a patient with two types of renal cell carcinoma (clear and papillary) in the left kidney – nephrectomy was performed. Among the first symptoms, bone metastases occurred. As far as we know, this is the first reported case in literature with such an unexpected outcome, because the patient is still alive and feels good.

INTRODUCTION

Renal cell cancer (RCC) represents 3% of all cancer diagnoses and 3% of all cancer related deaths. RCC is the third most frequent urological malignancy. At diagnosis approximately 60-70% of patients are found to have localized/regional disease and 40% have distant metastasis [1]. The incidence of RCC has increased in recent years. The increased rate of early detection of RCC in recent years has adjusted the incidence rate of advanced disease – age, however, was not affected [2]. Surgery is the main curative therapeutic approach.

The aim of this article is to present a very rare occurrence of RCC in a left kidney two different types of carcinoma – clear and papillary.

CASE DESCRIPTION

The patient, aged 61 years, underwent magnetic resonance imaging (MRI) and computed tomography (CT) scans, which revealed metastases to the spine at the thoracic (Th), lumbar (L), and sacral (S) levels with pathological fractures of vertebral bodies Th11 and L4, as well as two tumors in the left kidney (LK).

The CT scan did not reveal any pathological features in the liver, spleen, suprarenal glands, right kidney, or pancreas. However, in the upper pole of the LK, a structure 29 mm in diameter was appreciated – a hyperplastic change (Fig. 1). Also in the LK, on the level of the renal pelvis, we visualized a cyst that was 4 cm in diameter (Fig. 2). Discopathy and degenerative changes were evident in the L-S spine. In May 2011 the patient was operated on (laminectomy S1/S2) at Saint Raphael's Hospital in Cracow because of a metastatic tumor in the vertebral column at the level of S1/S2 on the right side; histopathology: metastatic bone cancer – clear cell carcinoma. In July of 2011, due to pathological fracture of ver-

tebral bodies Th10, Th11, and L4, a vertebroplasty was performed to achieve decompression and the tumor from the right humerus was resected, and – at the Institute of Oncology in Gliwice – a one-time analgesic 8 Gy palliative radiotherapy was applied to the following areas of the spine: L4-S2 with margins; Th 9-11; and the closest 1/3 of the right humerus – 20 MV photons.

During preparation of our facilities to the left sided nephrectomy the patient was consulted internistically and anesthesiologically (lab tests were normal). On the 29th of July 2011 a left sided laparoscopic transperitoneal nephrectomy with sparing of the left adrenal gland was performed. The post-operative course was uneventful. On the seventh day, in a generally well state, the patient was discharged home.

Macroscopic histopathological examination:

Left kidney: dimensions = 11 x 7 x 6.5 cm. Tumor (I) 2.8 cm in diameter on anterior cortical surface of the left kidney; in cross-section, the tumor is brown with yellow foci. Tumor (II) on posterior surface with 5 cm diameter and necrotic foci with extravasation of blood seen in cross-section.

Histopathology exam No.: 1090 494 – 514.

Histopathological examination:

1090 494 – 495 Tumor (I): clear cell carcinoma Fuhrman grade II
1090 496 – 497 Border of tumor (I): clear cell carcinoma Fuhrman grade II

1090 498 – 501 Tumor (II): necrotic papillary renal cell carcinoma (type I) Fuhrman grade III

1090 502 – 503 Border of tumor (II): necrotic papillary renal cell carcinoma (type I) Fuhrman grade III

1090 506 – 507 Renal pelvis and adipose layer middle in the hilar part of the left kidney: carcinomatosis

DISCUSSION

Clear cell carcinoma belongs to the most common types of RCC – beside granular cell and others such as papillary RCC [3]. Both tumors were confirmed in the resected LK, they varied in size, location, and histological picture. Tumor (I) was qualified by pathologists to the traditional group of clear cell RCC. It arises from the epithelial portion of the proximal convoluted tubule. It is composed of large round or polygonal cells with copious amounts of cytoplasm, a well-formed cell membrane, and a small round nucleus. The size of the nucleoli varies, from very small to significantly enlarged with varying outline. This is one of the characteristics of malignant tumor according to Fuhrman's scale [4]. Necrotic foci and hemorrhages can also occur, which also provide insight as to the aggressiveness of the tumor. The cytoplasm, in its composition, contains a lot of glycogens and lipids – which is what makes it clear and forms the typical morphological characteristic.



Fig. 1. CT – tumor (I) in upper pole of left kidney.



Fig. 2. CT – tumor (II) near the left renal pelvis.

The cancer cells are constituted from not only solid, follicular, or lobular structures, but also tubular, trabecular, or cystic.

Papillary RCC accounts for approx. 14% of all renal tumors. It is usually limited to the kidney, enclosed in a thick connective tissue capsule that is sometimes calcified. The cell nuclei are circular without signs of atypia. It sometimes reaches large sizes without metastasis, and if metastasis occurs, it is usually limited to the lymph nodes [5]. Morphologically and cytogenetically, it is different from conventional clear cell carcinoma. On cross-section of the tumor, hemorrhages, necrosis, calcifications, and glazing of stromal connective tissue sometimes occur.

In our case, we diagnosed papillary RCC type 1. The characteristic feature of this kind of tumor are papillae covered with a single layered membrane composed from small cytoplasm-poor cells. It is very rare to encounter these types of tumors at a high degree of malignancy [6, 7, 8]. Sarcomatous transformation may occur in 5% [9].

Renal cancer is most frequently encountered incidentally and involves only one kidney, while only in 4% of cases it occurs as

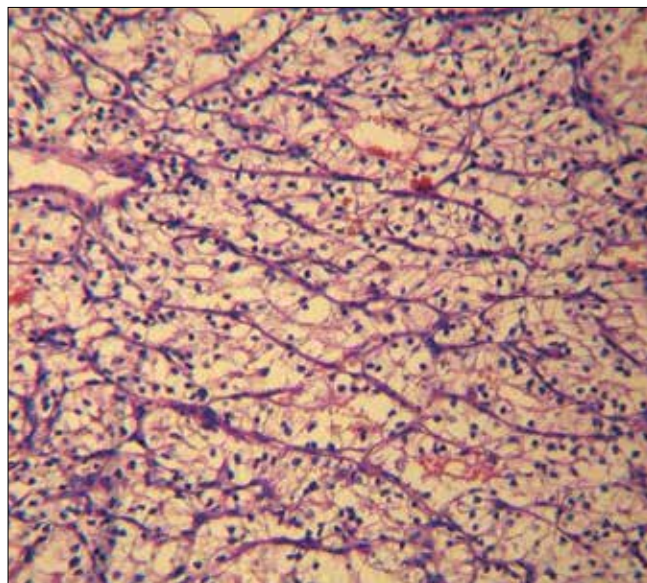


Fig. 3. Tumor (I) – clear cell carcinoma in upper pole of left kidney. The characteristic solid, alveolar and lobular structure, with eosinophilic fluid with erythrocytes, and a stroma filled with thin-walled blood vessels.

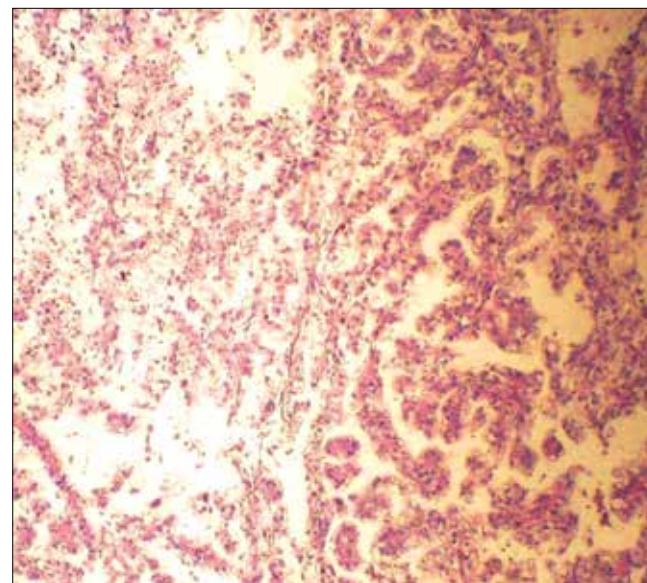


Fig. 4. Tumor (II) – papillary renal carcinoma in the hilar region of the left kidney. Characteristic histology with papillary and tubular structure, with hemorrhages, and glazing of the connective tissue stroma.

familial or multiple as in von Hippel-Lindau syndrome. Bilateral occurrence of renal tumors are found in 1-8% of cases. It is also important whether the tumors occur simultaneously (synchronous) or one after another (asynchronously), indicating primary of metastatic changes respectively.

Synchronous tumors often feature genetically determined changes in typical pathological syndromes such as von Hippel-Lindau. In patients with tumors in both kidneys without obvious genetic predisposition, tumors occur synchronously in 24% of cases and 76% occur asynchronously [10].

CONCLUSION

The histological picture in our patient suggests an extremely rare case of the coexistence of two types of renal cell cancer in one kidney, which is why we decided to publish this event.

The clinical course of the cancer was complicated by numerous metastatic changes involving the skeletal system that required intervention. Local disease progression, infiltration of the tumor into the renal pelvis, and the presence of perinephric fat suggest a much more advanced process. These findings urged us to resign from conservative surgery due to fear of multifocal disease and the knowledge that the primary cancer focus, if left, could predispose to subsequence metastasis. The patient currently lives with a good general state and, eventually, further treatment will be planned under oncologic control.

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