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## Synchronous Chromophobe Renal Cell Carcinoma and Non-Hodgkin Lymphoma, B-Cell type: A Case Report

### ABSTRACT:

A case of male patient 74 years old, presented with renal mass confined to the kidney, diagnosed as synchronous chromophobe renal cell carcinoma and non-Hodgkin lymphoma, B-cell type, immunoconfirmed. There is no lymph nodal involvement by lymphoma or metastatic disease at initial presentation.

**Keywords:** Chromophobe Renal Cell Carcinoma; Non-Hodgkin lymphoma; B-Cell Type; Case Report.

### INTRODUCTION

Although clear renal cell carcinoma was still the most common renal cell cancer subtype in all genders and ages, in young females chromophobe renal cell carcinoma was the most predominant non-clear subtype type of renal cell cancer. It account for approximately 62.3% of non-clear cell renal cell cancer [1]. Primary renal lymphoma is very rare [2]. It estimated for 0.7% of all extra nodal lymphomas in North America [3] and 0.1% of all malignant lymphomas in Japan [4].

The most common primary malignancies accompanied renal cell carcinoma were breast, colorectal, prostate and bladder cancer, and hematologic malignancies especially non-Hodgkin's lymphoma [5]. Coincident renal cell carcinoma and primary renal non-Hodgkin's lymphoma is rare. The cause of this combination still unclear [6].

### MATERIALS AND METHODS

#### Clinical history

A 74 years old South Egyptian man, was admitted to the surgical oncology department at South Egypt Cancer Institute, Assiut University with a complaint of left loin pain. The medical and familial history were unremarkable.

Non and post-contrast Computerized tomography (CT) revealed well defined solid mass posteriorly at middle, measured 7 × 8 cm, infiltrating the middle calyx.

At our institute, the patient underwent radical nephrectomy. Postoperative CT pelvis revealed no residual disease. Pelvic peritoneal spread of the tumour was absent. Patient was referred to the medical oncology department. Metastatic work up was done and CT Chest revealed no metastatic disease

Radical nephrectomy specimen was referred to our pathology department and dissected according to dataset guidelines of the Royal College of Pathologists.

## Immunohistochemistry

Five-micron-thick sections were cut from the paraffin blocks, which were evaluated for immunohistochemistry. Immunostaining was performed using an automated staining machine (Dako Autostainer Link 48). The following primary antibodies were used: CK7, CD10, vimentin, CD117 (C-KIT), CD3 and CD20. Markers were ready to use provided from Dako. Antigen retrieval was done in PT link using Dako system (Target Retrieval Solution, High pH, Concentrated 50× Dako). Blocking of endogenous peroxidase activity was performed using Dako peroxidase blocking reagent. Slides were incubated with the primary antibody and then with a universal staining kit horseradish peroxidase (HRP). The slides were visualized with diaminobenzidine (DAP solution) and subjected to haematoxylin counterstaining. Images and measurements were captured using Toup-Cam (XCAM Full HD Camera, model number: XCAM1080PHB).

## RESULTS

### Pathological findings

#### Gross findings

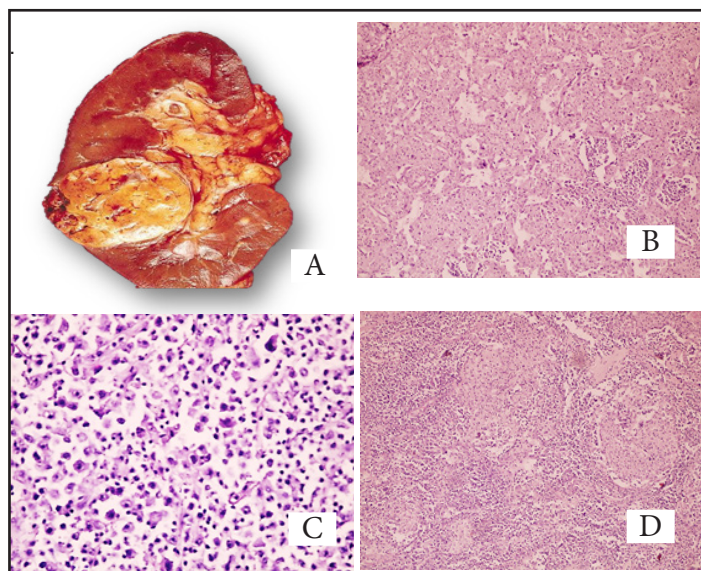
Sections from the left nephrectomy specimen, measured 20 × 10 × 7 cm. On opening showed a well-defined mass, measured 7 cm in maximal thickness. The tumor was located at the cortex infiltrating middle calyx. It was soft to firm tan golden cut section, with foci of necrosis and haemorrhage (Figure 1A). The renal sinus and renal hilum were spared.

#### Microscopic findings

Microscopically, sections from renal mass revealed biphasic neoplasm composed of nests and sheets of epithelioid cells (Figure 1B) and discohesive atypical cells (Figure 1C). The nests of epithelioid cells intermingled with the discohesive atypical cells were observed (Figure 1D). Discohesive atypical cells exhibiting signs of anaplasia in the form of high N/C ratio, nuclear pleomorphism, anisonucleosis, prominent nucleoli and mitoses (Figure 1C). Epithelioid component showed solid growth, nests and broad trabeculae, composed of polygonal cells with distinct cell borders due to cytoplasmic retraction. Nuclei are irregular, wrinkled and angulated with perinuclear halos (Figure 1B). Staging was performed according to the WHO 2016. CK7 stained diffusely positively and strong in epithelioid tumour component and negative in discohesive atypical cells (Figure 2A). CD10 and vimentin were negative

in both component (Figure 2B and 2C). Epithelioid component of the tumour only positive for CD117 (C-KIT) (Figure 2D). CD20 stained diffusely positively negative in discohesive atypical cells and negative in epithelioid tumor component (Figure 2E). CD3 was negative in bot component and stained only mature lymphocytes (Figure 2F). Lymphovascular invasion and peri-neural invasion were absent.

The final diagnosis was synchronous chromophobe renal cell carcinoma, and non-Hodgkin B-cell lymphoma. The renal sinus, renal pelvis, renal capsule and ureteric margins were free from tumour involvement. All regional lymph nodes were free from tumor deposits. So, the patient was staged as pT1b N0 M0.



**Figure 1:** Gross and microscopic appearance of the renal mass: (A) Well defined yellowish tan renal mass in in the renal cortex. (B) Microscopic examination at (20x), in this field the solid growth of epithelioid component is predominating with perinuclear halos. (C) Microscopic examination at (40x), discohesive atypical cells is exclusively present in this field. (D) Microscopic examination at (20x), nests of epithelioid cells (red arrow) intermingled with the discohesive atypical cells (blue arrow).

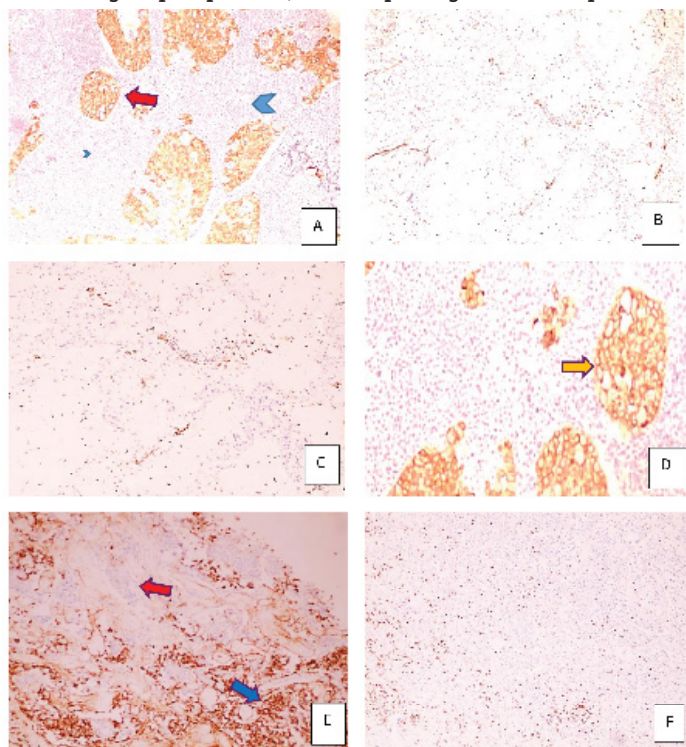
## DISCUSSION

There were many reports in the literature regarding the association of other malignancies with RCC. Concurrent occurrence of RCC, NHL and leiomyoma in the same kidney has been documented [7]. Concurrent Hodgkin's lymphoma and RCC has been reported [8]. In addition, synchronous diffuse large B cell lymphoma with RCC [9] and T cell lymphoma with RCC [10] have been reported.

In current case, we reported synchronous primary neoplasms with different histology confirmed by immunohistochemical

study. One of these is the solid component that stained positive for CK7 and CD117, which confirm that it is chromophobe renal cell carcinoma. The negativity for CD10 and vimentin exclude the clear renal cell carcinoma [11]. The other component is loose dischusive component, which expressed CD20 and lacking other marker done. Therefore, it prove non Hodgkin lymphoma, B-cell type [12].

Several hypotheses have been proposed for increasingly reported phenomenon of RCC and hematologic malignancies occurring in the same patient. The majority of these cases have been lymphoid hematologic malignancies, suggesting a possible immunologic explanation. Some authors have proposed that immune dysregulation during a response to the renal cell carcinoma leading to lymphoid proliferation and then lymphoid malignancy [6]. However, this might explain those cases in which there is synchronous development of both malignancies and for those in which lymphoma follows RCC. Nevertheless, the hematologic malignancy appeared first in a wide group of patient, thus requiring another explanation.



**Figure 2:** Immunohistochemical assessment of the tumor: (A) Microscopic examination at (20x), showing strong positive expression of CK7 in the epithelial component (red arrow) while negative in separate cells in between (arrowhead). (B) Microscopic examination at (20x), showed negative staining for vimentin in both component. (C) Microscopic examination at (20x), C10 was negative in both component of the tumor. (D) Microscopic examination at (40x), nests of epithelioid cells only was positive for CD117 (C-KIT) (yellow arrow). (E) CD20 stained diffusely positively negative in dischusive atypical cells (blue arrow) and negative in epithelioid tumor component (red arrow). (F) CD3 was negative in bot

component and stained only mature lymphocytes.

Another hypothesis is an infectious agent, for example simultaneous early adenocarcinoma and mucosa-associated lymphoid tissue (MALT) lymphoma of the stomach associated with *Helicobacter pylori* infection [13]. A genetic basis for the association must take in consideration. Both NHL and RCC have several common chromosomal abnormalities, including deletion of 17p and mutation of 3p [14,15].

## CONCLUSION

Despite the occurrence of concomitant renal cell carcinoma and non-Hodgkin lymphoma is uncommon. Nevertheless, we must consider both neoplasm if notice different histology for proper management. Our results recorded Synchronous chromophobe renal cell carcinoma and non-Hodgkin lymphoma, B- cell type that is limited to the kidney with no lymph nodal involvement by lymphoma or metastatic disease.

## Competing Interests

The author has no conflict of interests to declare.

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