Renal Collecting Duct Cancer: a Report of 2 Cases

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Renal collecting duct cancer is a rare malignant tumor, which accounts for 1% to 2% of epithelial kidney tumors.[1] Its pathological appearance has been easily misdiagnosed as a mammilliform renal cell carcinoma or as other tumors. The malignancy of renal collecting duct cancer is high, with early metastasis and poor prognosis. The clinical data for 2 cases of the tumor are discussed in this report, including reports on the histopathology and the changes in immunohistochemistry.

Clinical Data

Case 1

The patient was a 50-year-old female. She was admitted after 4 months of pyrexia accompanied with hypodynamia. Physical examination showed that her mental state was poor, with a chronic sickly complexion and an appearance of slight anemia. There was a percussion pain in the right kidney (±). Laboratory examination: blood routine was WBC 5.7×10^9/L and Hb 8.29/L. Supersonic B showed a low echo area with a scope of 3.0 cm× 2.8 cm and 9.5 cm× 4.5 cm at the dorsal part of the superior pole of the right renal pelvis and at the inferior pole of the right renal pelvis. The boundary was distinct and the form was irregular where there was some gravel-like calcifying points. A 1.1 cm dark-space of echoless fluids was detected in the renal pelvis. The left renal pelvis showed a cystic solid occupying lesion. MRI examination: there was an occupying lesion at the right kidney which could be taken as a renal carcinoma. She received a radical operation for a tumor of the kidney on October 8, 2003. The tumor identified during the operation was 13 cm× 8.5 cm, with a hard texture and an indistinct demarcation of peripheral tissue. The result of the pathological examination was renal collecting duct cancer.

Case 2

The patient was a 57-year-old male. He was hospitalized after having abdominal gas pain accompanied with painless gross hematuria for one year. CT showed that there was an occupying lesion at the superior pole of the right kidney. He had received an operation on a left renal lump in another hospital, with resection of the left kidney. An oval cystic lump of 8.5 cm× 5 cm was seen at the superior pole of the left kidney during the operation, which was adhesive with the peritoneum and pleural membrane, with a smooth surface and intact integument. The result of the pathological examination was renal collecting duct

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cancer.

A Brief Summary

A renal collecting duct cancer (RCDC) is rare. Masson, et al. in 1955 first noted the disease and described it as a cystic renal cell duct cancer with papillary ecphyma, because the covering epithelium of the capsule wall very much resembled Bellini's epithelioma. In 1986, Fleming and Lewis introduced the diagnostic criteria for RCDC. RCDC belongs to a renal cell duct carcinoma, based on previous classification of the tumors. Because its pathological characteristic and biological behaviour are quite different from a general renal cell carcinoma, it was classified as an independent type by the new WHO international classifications of tumor histology. Its feature is that the cancer cells are similar to the epithelium of the collecting duct or of Bellini's ducts.

The tumor can occur in patients of any age, among which the young and post-adolescent account for the majority. The most common primary symptoms are hematuresis and low back pain. The short course of disease and quick development are also one of the tumor's characteristics. The mean age of our two patients was 53.5.

Because the imagery, such as the supersonic B and CT, etc. cannot tell a renal cell carcinoma from RCDC, a pathological examination is the only means for a reliable diagnosis of the disease. The main histological character is that the tumor cells are irregular glandular tubiform, papillary, and there is a fibrous blood vessel axis in the nipple, with simple epithelium or laminated epithelium of the coating. It has a common nail-like construction, and it might be line-like, nest-like or sarcoma-like as the differentiation is poor. The cytoplasm is rich, acidophilic and fine granular, with an evident heteromorphism of the nucleus. There is a clear hyperplasy in the stromal fibrous connective tissue of the tumor, accompanied by a large amount of plasmocyte and lymphocyte infiltration. A displasia can be seen at part of the glandular epithelium of the collecting ducts around the tumor.

All the above morphologic changes were found in our our 2 cases. There was a strong reaction in the cytoplasm of the Vimetin positive tumor cells with immunohistochemical staining(Fig.1), which supports the pathological diagnosis of a renal collecting duct cancer. Under the electron microscope a renal collecting duct cancer, has an abundance of intermediate filaments in the tumor cells of the collecting duct cancer. Among the cells, the desmosomes and formation of microcapsules can be seen.

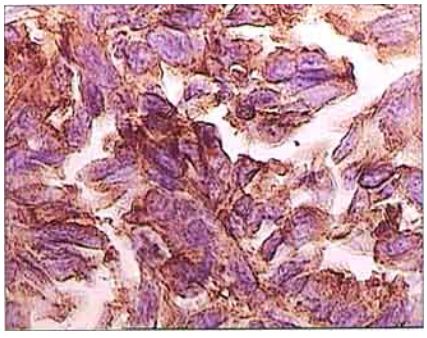

Fig.1. The SP method for the reaction in the cytoplasm of Vimetin tumor cells (SP × 400).

The differentiation of the following primary tumor of the kidney should be made as follows: ① papillary renal cell cancer: a rare tumor of the proximal-end renal cell of origin with a low potential for malignancy. Under the light microscope, the cancer cells are arranged as complicate corpora mammillaria, and the foamy macrophages form from time to time in the center of the nipple. The fibrous desmoplasia and inflammatory cellular reaction are rarely seen in the interstitium of the tumor, and the immunohistochemistry of the tumor expresses CK7. ②granular cell renal cell carcinoma: originating from the epithelium of the proximate nephric tubule, the glandular tubiform and papillary arrangement can be seen in the cancer cells; between the cancer nest, there is the interstitium full of dilating blood vessels, with a few single lymphocytes infiltrating. Immunohistochemistry shows a low molecular number CK, and positive EMA and CEA. Electron microscopy shows that in the cytoplasm of the cancer cells there is abundant glycogen and unequal lipoids. The cell organelles are less and there is a lot of microvilli on the surface of the cells. The connection and development of the cells are good.[2] The interstitium of the RCDC has copious proliferative fibrous connective tissues and most are with abundant plasma cell infiltration. ③Kidney medullar cancer: a very rare malignant tumor originating from the pelvis and renal papilla, named for its frequent incidence of sickle cells; histological expression is that the cancer cells are retecious, yolk cavity-like and lamellar, with a micro-papillary arrangement. The tumor cells are big and the kytoplasm is oxyphilic; the nucleus is vacuolar and the nucleolus is clear, part of them are accompanied by squamous metaplasia. The abundant interstitial neutrophil infiltration is most characteristic, which can even form

micro-abscess.[3] A difference from RCDC is the plasmocyte and lymphocyte infiltration.

Radical surgery of the kidney is the main method of treatment for RCDC, but it fails to cure the disease, and chemotherapy and immunotherapy have little effect. Early diagnosis is the best way for extending the patients' survival time.

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