

Accessory Adrenal Cortex in Kidney with Clear Cell Renal Cell Carcinoma

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Abstract : The accessory adrenocortical tissue is most often encountered around the adrenal glands themselves or sex organs. The frequency of accessory adrenal tissue in kidney is unknown but is apparently rare. We present a case of accessory adrenal gland in kidney involved by primary renal cell carcinoma. A 50-year-old male underwent radical nephrectomy for an incidentally detected renal mass. On pathologic examination, there was an accessory adrenal gland underneath the renal capsule in addition to clear cell renal cell carcinoma in the upper pole. Immunohistochemical staining results (inhibin+, D2-40+, CD10-, and CK-) were consistent with adrenal cortical tissue. It is important to be aware of the existence of accessory pararenal or intrarenal adrenal tissue. Ectopic adrenal tissue with clear cytoplasm may be misdiagnosed as renal cell carcinoma. In addition, a renal cell carcinoma involving accessory intrarenal adrenal tissue may be overstaged as renal cell carcinoma invading adrenal gland.

Key Words : accessory, adrenal gland, clear cell, renal cell carcinoma

Introduction

Accessory adrenal gland in other sites rather than adrenal gland are encountered in about 1% of adults [1,2]. In most cases, it is incidentally found around adrenal gland or sex organs. Accessory intrarenal or pararenal adrenal gland is very rare. The cortical cells

of adrenal gland grow as nests and often have clear cytoplasm. Histologically, it may mimic clear cell renal cell carcinoma, which is most common malignant renal neoplasm [3,4]. We present a case of accessory adrenal gland in kidney involved by primary clear cell renal cell carcinoma.

CASE REPORT

A 50-year-old male was referred to urology department of our hospital due to incidentally detected renal mass. Abdominal ultrasound examination and Computerized tomography revealed cystic mass at the upper pole of the right kidney (Fig. 1). Right radical nephrectomy sparing adrenal gland was performed under the impression of renal cell carcinoma. On gross examination, a multiseptated cystic mass, measuring 3.5 x 2.6 x 2.3cm, was present in the upper pole of the kidney (Fig. 2). It was confined within the renal capsule and abutted a gold yellow adrenal gland-like tissue, measuring 3.5 x 2 x 0.4cm, underneath the renal capsule. Microscopically, the cystic renal mass was composed of multiple cysts of variable size lined with clear cells and intervening solid nodular areas of clear cells (Fig. 3). The histologic features of this cystic mass were

consistent with clear cell type renal cell carcinoma. The gold yellow tissue on gross examination was composed of adrenal cortical tissue, some of which had clear cytoplasm (Fig. 4). By immunohistochemical stainings, the adrenocortical cells were positive for inhibin and D2-40, while negative for cytokeratin and CD10. On the contrary, adjacent tumor cells of clear renal cell carcinoma were negative for inhibin and D2-40, while positive for cytokeratin and CD10. These immunohistochemical staining results were consistent with adrenal cortical cells and clear cell renal cell carcinoma, respectively. With 3 years of follow-up, the patient is well without evidence of recurrence or metastasis.

DISCUSSION

Accessory adrenocortical tissue is most often encountered around the adrenal glands

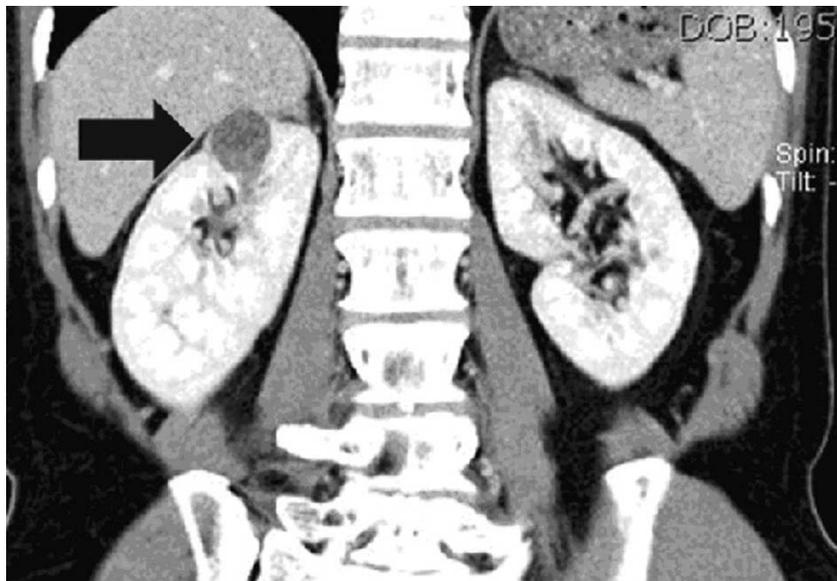


Fig. 1. Computerized tomography of abdomen reveals a cystic mass at the upper pole of right kidney (black arrow). The mass has internal septation.

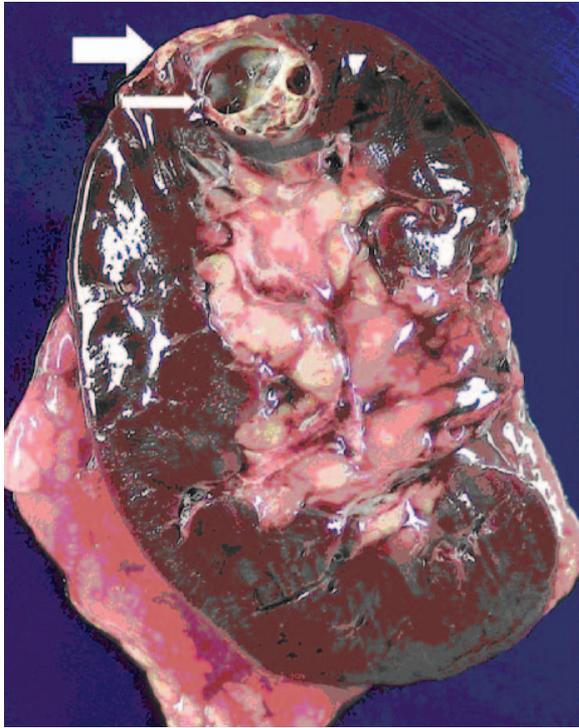


Fig. 2. Gross photograph of bivalved kidney shows a gold-yellow colored flat lesion (3.5 cm in greatest dimension, thick white arrow) underneath the renal capsule. A pale yellow and multiseptated cystic mass (3.5 cm in greatest dimension, thin white arrow) is present abutting the flat lesion in the upper pole.

themselves or sex organs. It is because adrenal cortical tissue develops from mesodermal coelomic lining, which is close to emerging gonads and may be associated with and migrate alongside the gonads [2]. The frequency of accessory adrenal gland is relatively high. Jaffe et al. reported that accessory adrenal glands were found in 50% of postmortem examination on neonate and children. In the mean time, Mitchell et al. and Czaplicki et al. reported that its incidence in adult is much lower with only 1% of examined cases [1,5]. The dramatic decrease of incidence is attributed to atrophy during

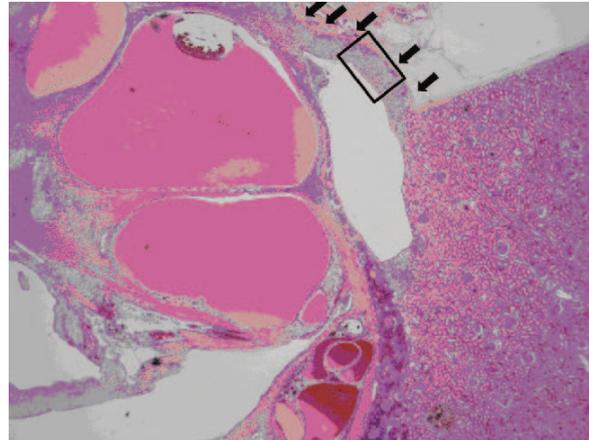


Fig. 3. The low magnification field on light microscopic examination shows renal tissue (right side), cystic renal cell carcinoma (left side) and adrenal tissue (black arrows) (H&E, X12.5).

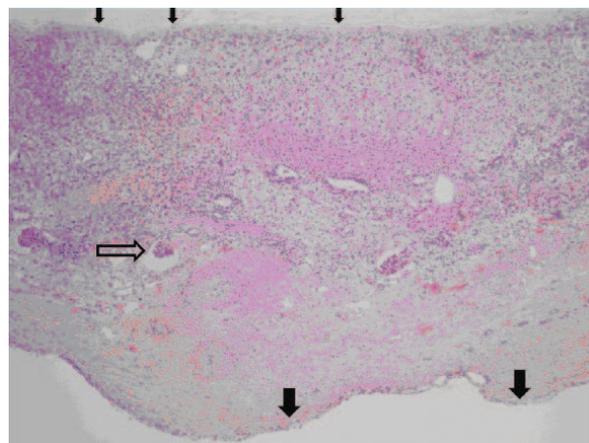


Fig. 4. Higher magnification of adrenal cortical tissue in Fig.3. (black empty rectangle). Adrenal cortical tissue is located underneath the renal capsule (small black arrow). Intermixed with adrenal tissue is renal tissue (black empty arrow) and cystic wall of clear renal cell carcinoma (thick black arrow) (H&E, X40).

aging. The frequency of accessory adrenal tissue in adult kidney is unknown but is apparently rare with only several cases reported on English literature [6,7]. Histologically the adrenal cortical cells may

show nests with clear cytoplasm and may look similar with cells of clear cell type renal cell carcinoma. In histologically difficult case, they can be differentiated using immunohistochemical stainings. The adrenal cortical cells are positive for inhibin, calretinin and D2-40, while negative for cytokeratin, CD10 and EMA. The immunohistochemical stainings for clear cell renal cell carcinoma are vice versa. The heterotopic adrenal tissue of present case was easily identified on histologic examination and showed typical immunohistochemical staining pattern (inhibin+, D2-40+, CD10-, and CK-).

Since the adrenal cortical cells may be confused with clear cell renal cell carcinoma, it is important to be aware of the existence of accessory adrenal tissue or adrenal-renal fusion [3,4,6]. Especially in needle biopsy, there are chances to misdiagnose ectopic adrenal tissue with clear cytoplasm as renal cell carcinoma and overstage the renal cell carcinoma limited to kidney with involvement of accessory intrarenal adrenal tissue as renal cell carcinoma invading adrenal gland. In addition, radiologically, the renal cell carcinoma in kidney associated with pararenal accessory adrenal gland may be misinterpreted as presumptive renal cell carcinoma with lymph node metastasis [8,9].

In conclusion, we report a case of accessory intrarenal adrenal gland associated with clear cell renal cell carcinoma. It is important to be aware of existence of accessory adrenal gland in kidney.

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