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## A CASE REPORT OF RENAL PELVIC SQUAMOUS CELL CARCINOMA

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We describe a case of a 75-year-old woman with squamous cell carcinoma in the right renal pelvis accompanied by multiple dysplasia in the upper urinary tract. Though it is difficult to make a preoperative diagnosis of squamous cell carcinoma, lavage cytology is particularly valuable. Renal arteriography and cross-sectional imaging are also useful to assess an accurate stage. We postulate that severe dysplasia could be a precursor of squamous cell carcinoma as well as transitional cell carcinoma.

**Key words:** Squamous cell carcinoma, Dysplasia, Renal pelvic tumor, Renal pelvis, Kidney

### INTRODUCTION

Squamous cell carcinoma of the renal pelvis is an uncommon but fatal disease<sup>1)</sup>. More than 120 cases have been reported in the Japanese literature so far. Recently we encountered one case with this lesion and multiple dysplasia of the upper urinary tract. In this article, the clinicopathological study of this case is presented with a review of the recent literature.

### CASE REPORT

A 75-year-old woman was referred for evaluation of right backache and flank mass found at a local clinic. She had been suffering anorexia and weight loss for 3 months. She denied any urological symptoms. Physical examination was normal except for a mobile mass in the right abdomen. Pyuria with *Pseudomonas putida* was identified by urinalysis and urine culture, but hematuria was unremarkable

with 3~4 red cell per high power field. Laboratory studies revealed hypercalcemia and inflammatory conditions such as elevated ESR, highly positive CRP and leucocytosis. Sonography demonstrated a highly echogenic mass with irregular margin in the right kidney (Fig. 1). Excretory urography showed no excretion of contrast medium from the right kidney, but the other collecting system was normal. It was impossible to fill medium into the right renal pelvis by retrograde pyelography (Fig. 2), when lavage cytology was positive for squamous cancer cells and atypical transitional cells (Fig. 3) despite negative cytology of voided urine. Computed tomography revealed a heterogenous and ill-defined mass in the right enlarged kidney (Fig. 4). Right renal arteriogram disclosed encasement of intrarenal vessels with neovascularity that vanished after infusion of epinephrine (Fig. 5). The preoperative diagnosis was right renal

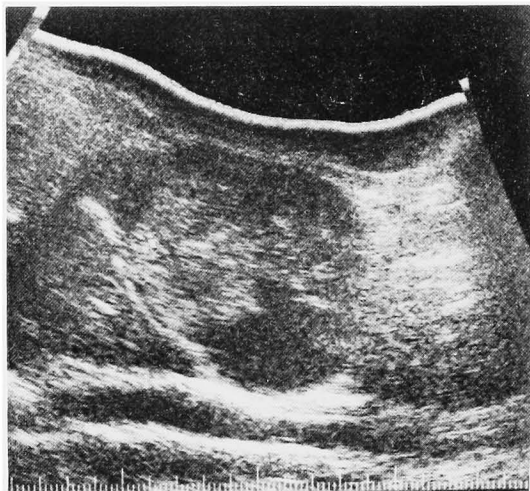


Fig. 1. Renal sonography demonstrated a highly echogenic area, which was different from the normal central echo complex, in the right kidney

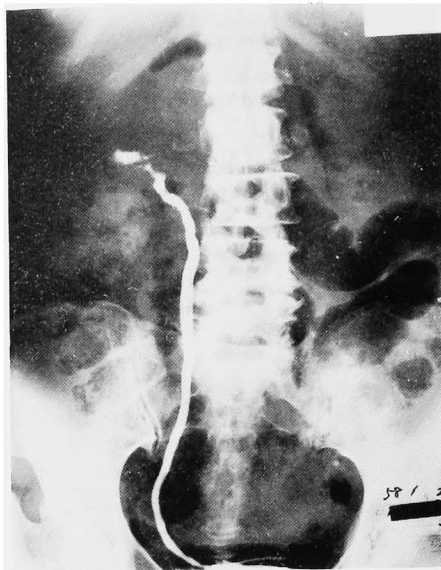


Fig. 2. The right renal pelvis without secretion of contrast medium on IVP could not be filled even by retrograde pyelography

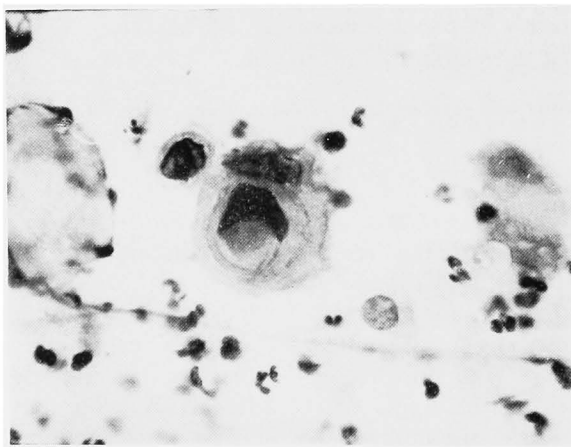


Fig. 3. Keratinizing squamous cells showing pearl formation and dyskaryotic transitional cells were observed in irrigated saline of right renal pelvis. Papanicolaou's stain,  $\times 600$

pelvic tumor, with strong suspicion of squamous cell carcinoma in view of the cytologic results. Right nephroureterectomy was performed through a transperitoneal approach. The surgical specimen weighed 525 g. Grossly, yellowish tumor measured  $8.0 \times 7.5$  cm on the cut section and filled the cavity of the pelvis almost completely (Fig. 6). But there was no

evidence of capsular invasion in spite of extensive parenchymal infiltration. Microscopically, the tumor was composed of cancer cells having an eosinophilic cytoplasm and nuclear pleomorphism. Pearl formation was present within cancer cell nests (Fig. 7). A number of mitotic figures were also observed. Retrograde invasion of cancer cells to collecting

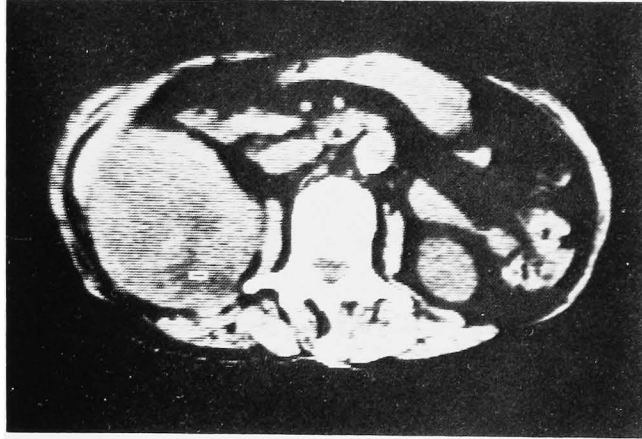


Fig. 4. Computed tomography revealed a heterogenous and ill-defined mass localized in the right enlarged kidney

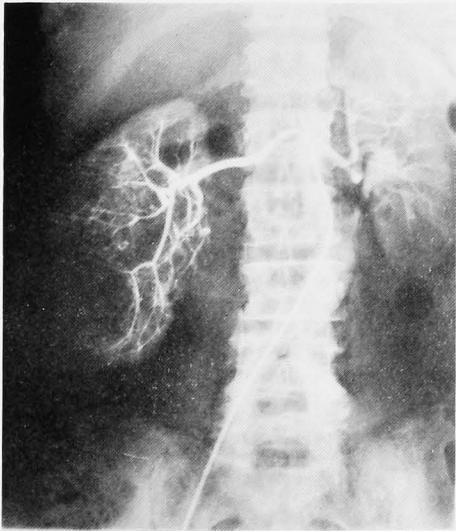


Fig. 5. Right renal arteriogram disclosed encasement of intrarenal vessels with neovascularity. In the lower part is shown arterial stretching which was retrospectively confirmed as effect of dilated calices

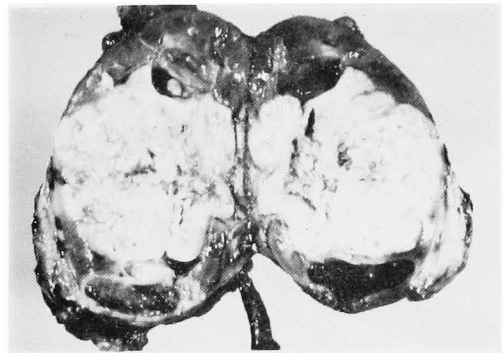


Fig. 6. Macroscopically, yellowish tumor with a cut section 8.0 x 7.5 cm occupied the entire pelvis

tubules was observed. So this case was regarded as squamous cell carcinoma of the renal pelvis. Parenchymal stroma exhibited marked lymphocytes-infiltration and sparse lymphoid follicles around the tumorous lesion. Furthermore, macroscopically normal mucosa in the upper calices and proximal ureter had foci of severe dysplasia, which was composed of atypical

transitional epithelia. The cell layers increased with irregular arrangement (Fig. 8).

The patient received postoperative adjuvant chemotherapy including 5-FU, VCR, PEP, CPA and ADM, but died of interstitial pneumonia about 3 months after surgery.

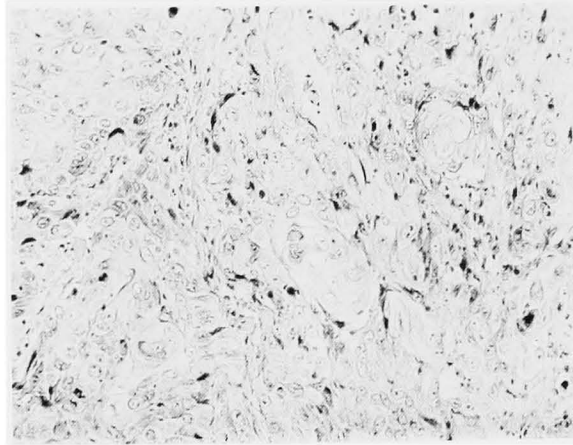


Fig. 7. Microscopically, the tumor was composed of sheets of atypical cells with extensive keratinization and pearl formation. H : E stain,  $\times 200$

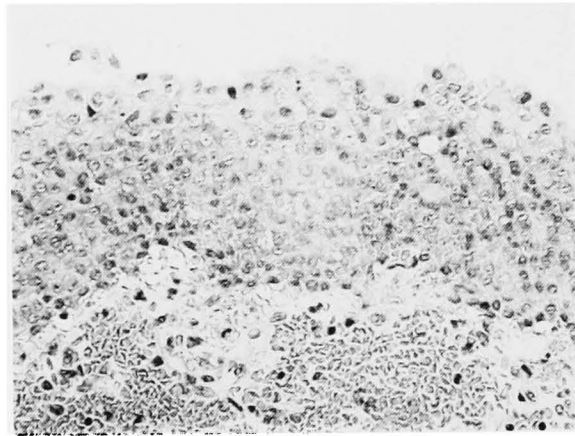


Fig. 8. Lesion of severe dysplasia in the proximal ureter as well as the upper calices. The epithelium consists of atypical transitional cells and shows irregular arrangement of cell layer. Note the increased number of cell layers and nuclear atypism. H - E. stain,  $\times 200$

### DISCUSSION

More than 120 cases of squamous cell carcinoma of the all renal pelvic tumor, accounting for approximately 15%<sup>3)</sup>, have been reported in the Japanese literature<sup>2)</sup>. Focal metaplastic squamous change with atypia could be confused with pure squamous cell carcinoma, which might have accurately low frequency<sup>4)</sup>.

In the histogenesis of this carcinoma, chronic irritation by infection, calculi<sup>1)</sup> or thorotrast<sup>5)</sup> is considered to play a significant role. Cholesteatoma and leukoplakia were recognized as premalignant conditions<sup>6)</sup> and, probably 25% of vesical leukoplakia has been reported to progress to epidermoid carcinoma<sup>7)</sup>. However, no case of leukoplakia, unusual in the upper urinary tract, displaying progression to

neoplasm has been documented to date<sup>8)</sup>. Moreover, the frequency of the coincidence of squamous cell carcinoma and squamous metaplasia in the renal pelvis has been 8~12%<sup>8)</sup>, which is lower than that of other organs. There is no evident relationship among these benign alterations in the upper urinary tract. Severe dysplasia, often accompanied by uroepithelial cancers, might be regarded as a precancerous lesion<sup>9)</sup>. Coexisting multiple dysplasia in the upper urinary tract in the present case is of great interest in relation to the pathogenesis of squamous cell carcinoma. It is suggestive of the possibility that dysplasia could be a precursor lesion of not only transitional cell carcinoma, but also squamous cell carcinoma. Although squamous cell carcinoma of the upper urinary tract is reported unicentric, our case might suggest the possibility of multiplicity as well as transitional cell carcinoma.

Many patients with squamous cell carcinoma of the renal pelvis complain of pain, hematuria and abdominal mass<sup>1)</sup>. Flank pain is the most common presenting complaint, and hematuria occurs at a lower frequency than in cases of transitional cancer<sup>1)</sup>.

It is difficult to make a definite diagnose of this entity because of coexisting calculi, infection or hydronephrosis. As non-functioning kidney occasionally occurs in advanced renal pelvic tumors including squamous cell carcinoma<sup>10)</sup>, usual exfoliative cytology might be of little help in diagnosis. In the present case, lavage cytology, which could be obtained after irrigation with saline, revealed squamous cancer cells. Therefore, lavage cytology by a simple procedure could be particularly valuable. There are, radiologically, no specific findings in the case of squamous cell carcinoma of the renal pelvis. As this neoplasm is always infiltrative, rentogenographic findings are similar to those of other infiltrating tumors<sup>11)</sup>. The diminished vascularity is more characteristic in transitional or squamous cell carcinoma than in typical renal cell carcinoma<sup>12)</sup>. Pollen *et al.*<sup>13)</sup> demonstrated

diminished branching of arteries, the so-called "pruned-tree" appearance in the renal pelvic carcinoma. Encasement of intrarenal vessels indicates parenchymal invasion<sup>13)</sup>. In our case, right renal arteriography also demonstrated encasement of intrarenal arteries and neovascularity. However, the marked neovascularity which disappeared after infusion of epinephrine may have resulted from severe inflammation around tumor.

Small renal pelvic tumor is hard to find by cross-sectional images. Although some investigators have reported sonographical appearance of the renal pelvic tumor as an anechoic mass<sup>14,15)</sup>, in this case a highly echogenic mass with an irregular boundary which might indicate infiltration to renal parenchyma, was observed. Masuda *et al.*<sup>17)</sup> reported that computed tomography of the renal pelvis could not differentiate the squamous cell carcinoma from the renal parenchymal tumor. Our case showed an enlarged kidney on computed tomography, whereas the findings of sonography resembled the surgical specimen more than those of computed tomography. It is considered that detailed evaluation of the cross-sectional images by computed tomography and sonography could be of diagnostic value in making an accurate staging.

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## 和文抄録

### 腎盂扁平上皮癌の1例

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山 羽 正 義  
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田 中 卓 二

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栗 山 学  
坂 義 人  
西 浦 常 雄

尿細胞診によって術前に組織診断が可能であった75歳、女性の腎盂扁平上皮癌の1例を経験したので報告する。腎盂扁平上皮癌の術前診断は困難であるが、尿細胞診、とくに腎盂洗浄細胞診は有用であった。血管造影およびCTあるいは超音波による断層像は病期

診断に有用と考えられた。また、本症例に上部尿路の多発性高度異型上皮をともなっていたことより、高度異型上皮は移行上皮癌と同様、扁平上皮癌の前駆病変でもある可能性が示唆された。