Case report

Villous adenoma of the renal pelvis: A case report and literature review

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ABSTRACT

Villous adenomas are common in the gastrointestinal tract but are rare in the urinary tract. Villous adenomas of the urinary tract are identified mostly in the urinary bladder in the current published literature in English. There are only scattered individual case reports showing villous adenoma in the other parts of the urinary tract such as the urethra, ureter, and renal pelvis. Here, we report a fourth case of villous adenoma in the renal pelvis with manifestation of mucus-filled kidney (muconephrosis). A 54-year-old male patient presented with acute urinary retention with mucinuria initially and he finally received nephrectomy. No obvious evidence of recurrence has been noted in the 1-year follow-up.

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1. Introduction

Villous adenomas originating in the urinary tract are relatively rare. Villous adenomas are most frequently found in the gastrointestinal tract, seldom in the urinary tract, and even more rarely in the upper urinary tract. They have been identified mostly in the bladder followed by the urethra in the published literature. We report an additional case of villous adenoma arising in the renal pelvis (Table 1) that presented with acute urinary retention.

2. Case report

A 54-year-old man had suffered from dysuria for several days. Acute urinary retention attacked and he came to our emergency department for help. A urethral Foley catheter was indwelled and massive mucinous urine flowed out slowly. He also had symptoms including obscure right flank soreness, nocturia, weak stream with abdominal straining, incomplete emptying, and urinary frequency for more than 1 year. He had no other systematic symptoms, such as cardiovascular, respiratory, or gastrointestinal discomfort. He had a history of right renal stone more than 10 years previously but did not receive any treatment in the past. On physical examination, a palpable mass in the right abdomen was detected. Digital rectal examination revealed normal prostate size without hard nodules. The urinalysis and urine cytology did not show any abnormal findings. Laboratory data revealed a normal creatinine level and the estimated glomerular filtration rate was acceptable. Enhanced computed tomography (CT) revealed severe right hydronephrosis and atrophic cortex change with a renal stone of lower calyx (Fig. 1). No suspicious soft tissue lesion shadow was noted. Open-method nephrectomy was performed without complications and a significant quantity of yellowish jelly-like mucus flowed from this split kidney (Fig. 2). Gross examination showed a markedly enlarged kidney with a markedly dilated pelvicaliceal system filled with abundant mucus. There were several elevated nodules measuring up to 2 cm in the greatest diameter on the pelvic mucosa (Fig. 3). Two staghorn stones were also noted. Microscopic examination of the kidney showed multiple villous adenomas exhibiting papillary architectures with central fibrovascular cores, consisting of pointed or blunt finger-like processes lined by pseudostratified columnar epithelium (Fig. 4). Extensive mucin production, diffuse intestinal metaplasia, and urolithiasis of the renal pelvis were present. The patient felt much improved on urination after surgery. The post-operative course was smooth and the patient was discharged.
within 5 days. During the 6-month and 12-month follow-ups, the patient did not suffer from any discomfort and had no obvious CT evidence of recurrence.

3. Discussion

Except for colonic villous adenoma, villous adenoma seldom occurs in the hepatobiliary and genitourinary tracts.² Villous adenoma of the urinary tract has been noted most commonly in the urinary bladder, and has also been reported in the urethra, urachus, and prostate.³,⁴ The presence of villous adenomas in the upper urinary tract is relatively uncommon and they are rarely found in the renal pelvis.²,⁵ Patients are typically middle-aged and older males who present clinically with microscopic hematuria and lower urinary tract irritative symptoms.⁶ In some cases, mucinous urine was noted incidentally. Muconephrosis, first termed by Park et al.⁷ in 2002, describes a mucus-filled kidney by renal pelvic villous adenoma. Etiology of villous adenomas of the urinary tract is thought to arise from intestinal metaplasia of transitional

### Table 1

Summary of villous adenoma in the renal pelvis in published reports.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Age (y) &amp; sex</th>
<th>Symptom</th>
<th>Past history</th>
<th>Survey</th>
<th>Management</th>
<th>Outcome</th>
<th>Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park et al²</td>
<td>79 M</td>
<td>Fever, flank pain</td>
<td>Renal stone</td>
<td>CT</td>
<td>Nephrectomy</td>
<td>Unknown</td>
<td>USA</td>
</tr>
<tr>
<td>Shih et al¹²</td>
<td>64 M</td>
<td>Flank pain</td>
<td>Bil. renal stones</td>
<td>RP, CT</td>
<td>URS biopsy</td>
<td>Residual</td>
<td>Taiwan</td>
</tr>
<tr>
<td>Bhat et al³</td>
<td>52 M</td>
<td>Abdominal pain</td>
<td>Ureter stone</td>
<td>CT, MRI</td>
<td>Nephrectomy</td>
<td>NED</td>
<td>India</td>
</tr>
<tr>
<td>Current case</td>
<td>54 M</td>
<td>Flank pain, AUR</td>
<td>Renal stone</td>
<td>CT</td>
<td>Nephrectomy</td>
<td>NED</td>
<td>Taiwan</td>
</tr>
<tr>
<td>Frickmann et al³</td>
<td>85 F</td>
<td>Incidental</td>
<td>Renal stone</td>
<td>CT</td>
<td>Nephrectomy</td>
<td>Unknown</td>
<td>Germany</td>
</tr>
<tr>
<td>Bos et al¹⁰</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>Germany</td>
</tr>
</tbody>
</table>

AUR — acute urinary retention; CT — computed tomography; F — female; M — male; MRI — magnetic resonance imaging; NED — no evidence of disease; RP — retrograde pyelography; URS — ureterorenoscopic.

**Fig. 1.** Right kidney shows severe hydronephrosis with (A) thin renal cortex and (B) renal stones (indicated by arrows).

**Fig. 2.** Gross specimen: (A) intact appearance; (B) cut appearance shows abundant mucus-like material filling the dilated proximal ureter and renal pelvis.

**Fig. 3.** The pelvis is dilated and filled with mucus. There are several elevated nodules on the pelvic mucosa (arrow).
epithelium after long-term irritation such as stone impaction, chemical injury, or chronic inflammation. Histologically, villous adenomas of the urinary tract and villous adenomas of the colon and rectum are identical. They both exhibit rounded projections of pseudostratified columnar epithelium with goblet-type mucin-producing cells. Nuclear atypia is variable. Immunohistochemically, these two entities are also similar, with positive findings for cytokeratin 20 and carcinoembryonic antigen, and negative findings for epithelial membrane antigen staining in most cases.\(^3\)\(^4\)

In contrast to villous adenomas of the colon and rectum, about 50% of villous adenomas of the urinary tract show positive findings for cytokeratin 7, whereas villous adenomas of the colon and rectum showed negative findings.\(^3\)

Villous adenomas of the genitourinary tract have a good prognosis and surgical resection is curative. However, it is uncertain whether an untreated lesion might eventually develop into an adenocarcinoma. In our patient, nephrectomy was performed considering the atrophic change of the kidney with poor renal function and en-bloc resection of the kidney may be required for complete pathologic evaluation.\(^7\) For these cases of nonfunctioning kidney with marked hydronephrosis, nephrectomy is a choice of treatment. Considering the personal reason and the possibility of positive resection margins, our patient chose to take the open-method surgery, even though laparoscopic nephrectomy is a suitable alternative to open surgery for these cases and significantly reduces the morbidity of surgery. We should follow-up this patient closely due to the possibility of tumor recurrence or progression to adenocarcinoma.\(^8\)

Conflicts of interest

The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

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References