Carcinoma in situ arising in a tubulovillous adenoma of the distal common bile duct: A case report

Bum-Soo Kim, Sun-Hyung Joo, Kwang-Ro Joo

Abstract
Tubulovillous adenomas are common in the colon and rectum, but are rare in the common bile duct. Biliary adenomas may produce obstructive jaundice, which can be easily confused with a malignant neoplasm or stone. We report a case of a carcinoma in situ arising in a tubulovillous adenoma of the distal common bile duct causing obstructive jaundice. A 55-year-old male presented with a 10-day history of pruritus and progressive jaundice. Abdominal sonography and computed tomography showed a mass in the distal common bile duct. Endoscopic retrograde cholangiopancreatography showed luminal narrowing of the bile duct due to a polypoid mass. Positron emission tomography demonstrated no abnormal uptake. It was thought that this mass was a malignant tumor, thus a pylorus-preserving pancreaticoduodenectomy (PPPD) and presented 8 months later with a tubular adenoma in the gastrointestinal tract with high grade dysplasia. The final pathology showed a tubulovillous adenoma with carcinoma in situ. We reviewed the literature about the common bile duct adenomas of the distal common bile duct (CBD) or ampullary region has not been established. We report herein a case of a biliary adenoma with carcinoma in situ presenting painless jaundice in a man who was treated with a pylorus-preserving pancreaticoduodenectomy (PPPD) and presented 8 months later with a tubular adenoma in the gastrointestinal tract with high grade dysplasia. Our patient did not exhibit any clinical signs of familial adenomatous polyposis or Gardner's syndrome. We also reviewed the literature about the common bile duct adenoma found in the English literature (Table 1).

INTRODUCTION
Biliary adenomas are very rare tumors, which may pose diagnostic dilemmas preoperatively. Due to recent advances in diagnostic techniques and early diagnosis, biliary adenomas are often detected as high grade dysplasias or carcinomas in situ. The optimal therapeutic strategy for adenomas of the distal common bile duct (CBD) or ampullary region has not been established. We report herein a case of a biliary adenoma with carcinoma in situ presenting painless jaundice in a man who was treated with a pylorus-preserving pancreaticoduodenectomy (PPPD) and presented 8 months later with a tubular adenoma in the gastrointestinal tract with high grade dysplasia. Our patient did not exhibit any clinical signs of familial adenomatous polyposis or Gardner's syndrome. We also reviewed the literature about the common bile duct adenoma found in the English literature (Table 1).

CASE REPORT
A 55-year-old man was admitted to our hospital with a 10-day history of painless obstructive jaundice and pruritus. He had diabetes mellitus which had been controlled by an oral hypoglycemic agent. He had no family history of colorectal cancer or polyposis. On physical examination, he had icteric sclerae. Abdominal examination revealed no palpable mass or tenderness. Laboratory tests showed elevations of total bilirubin (8.2 mg/dL), direct bilirubin (6.3 mg/dL), alkaline phosphatase (302 IU/L), alanine transaminase (27 IU/L) and gamma glutamyl transpeptidase...
in the distal CBD (Figure 5). There 

Sex
Abdominal pain

Chronic jaundice and abdominal pain

Local excision (\(n=1\))

Papilloma (\(n=2\)) with moderate atypia

Local excision

Papilloma

Whipple

Villosus adenoma

Local excision

Villosus adenoma

Endoscopic excision

Tubulovillosus adenoma

Whipple

Villosus adenoma with malignant foci

Local excision

Villosus adenoma

Whipple (\(n=2\)), local excision (\(n=3\))

Villosus adenoma with mild dysplasia

(\(n=1\)), malignant foci (\(n=4\))

Local excision

Villosus adenoma with malignant foci

Whipple

Papilloma

Operation refused

Papilloma with focal dysplasia

Whipple

Papilloma

Abdominal pain

Local excision

Villosus adenoma with adenocarcinoma

Abdominal pain

Whipple

Adenoma with moderate dysplasia

Endoscopic excision

Tubulovillosus adenoma

Local excision

Tubular adenoma with moderate dysplasia

Whipple

Papilloma

Whipple

Villosus adenoma with atypia

Whipple

Villosus adenoma with mild dysplasia

PPPD

Tubulovillosus adenoma with carcinoma in situ

Table 1  Reported cases of common bile duct adenomas

<table>
<thead>
<tr>
<th>Author</th>
<th>Sex</th>
<th>Age (yr)</th>
<th>Presentation</th>
<th>Treatment</th>
<th>Histology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hulten, 1970[4]</td>
<td>M</td>
<td>57-60</td>
<td>Biliary colic ((n=1)) and jaundice ((n=2))</td>
<td>Local excision ((n=2))</td>
<td>Papilloma ((n=2)) with moderate atypia</td>
</tr>
<tr>
<td>Buckley, 1995[10]</td>
<td>M</td>
<td>34</td>
<td>Chronic jaundice and abdominal pain</td>
<td>Whipple</td>
<td>Villous adenoma with malignant foci</td>
</tr>
<tr>
<td>Kawakatsu, 1997[12]</td>
<td>M</td>
<td>60.6</td>
<td>Febrile jaundice</td>
<td>Whipple ((n=2)), local excision ((n=3))</td>
<td>Villous adenoma with mild dysplasia ((n=1)), malignant foci ((n=4))</td>
</tr>
<tr>
<td>Inagaki, 1999[14]</td>
<td>M</td>
<td>75</td>
<td>Epigastric pain and jaundice</td>
<td>Operation refused</td>
<td>Papilloma with focal dysplasia</td>
</tr>
<tr>
<td>Oshikiri, 2002[16]</td>
<td>M</td>
<td>69</td>
<td>Jaundice</td>
<td>Whipple</td>
<td>Papilloma</td>
</tr>
<tr>
<td>Ariche, 2002[17]</td>
<td>M</td>
<td>77</td>
<td>Abdominal pain</td>
<td>Local excision</td>
<td>Villous adenoma with adenocarcinoma</td>
</tr>
<tr>
<td>Katsianos, 2006[22]</td>
<td>M</td>
<td>58</td>
<td>Painful jaundice</td>
<td>Whipple</td>
<td>Villous adenoma with atypia</td>
</tr>
<tr>
<td>Xu, 2008[23]</td>
<td>F</td>
<td>27</td>
<td>Painless jaundice and pruritus</td>
<td>Whipple</td>
<td>Villous adenoma with mild dysplasia</td>
</tr>
<tr>
<td>Present case</td>
<td>M</td>
<td>55</td>
<td>Painless jaundice and pruritus</td>
<td>PPPD</td>
<td>Tubulovillosus adenoma with carcinoma in situ</td>
</tr>
</tbody>
</table>

PPPD: Pylorus-preserving pancreaticoduodenectomy.

tidase (321 IU/L). The serum amylase was within the normal range. The carbohydrate antigen 19-9 level was 131.6 U/mL (normal range, \(\leq 27\) U/mL) and the carcinoembryonic antigen level was 1.5 ng/mL (normal range, 5 ng/mL). The hepatitis serologic markers were all negative. On abdominal ultrasonography, the CBD was dilated with a distal non-shadowing polypoid mass, however, there was no pancreatic duct dilatation (Figure 1). The CT findings were similar to the ultrasonographic findings and therefore a distal CBD tumor was suspected (Figure 2). Endoscopic retrograde cholangiopancreatography showed a 2cm polypoid mass and stricture in the distal CBD (Figure 3). Bile cytology revealed no malignancy. Positron emission tomography (PET) showed no hypermetabolic lesions. Based on the preoperative diagnosis of a distal tumor, a PPPD was performed.

The resected specimen revealed a 2 cm \(\times\) 1.5 cm polypoid mass in the distal CBD (Figure 4). The final pathology showed a tubulovillosus adenoma with carcinoma in situ in the distal CBD (Figure 5). There was no lymph node metastasis. The patient recovered uneventfully. Eight months later, he developed multiple polyps (two in rectum, three in the colon and two in the stomach). An endoscopic mucosal resection was performed, which revealed a tubular adenoma with high grade dysplasia.

**DISCUSSION**

Tubulovillosus adenomas are usually encountered in the gastrointestinal tract, but as a primary site, the CBD is
rare. Adenomas arising from the CBD are summarized in Table 1. Saxe et al.\(^5\) was first to report a case of a vil-
lous adenoma in the CBD. The clinical manifestations of
a biliary adenoma include jaundice, right upper quadrant
abdominal pain, dyspepsia, nausea and vomiting in a
fashion similar to ampullary tumors. Villous adenomas
are benign tumors, but are considered to be prema-
lignant. It is possible that the adenoma-to-carcinoma
sequence occurs in biliary tumors\(^{23-26}\). Considering the
similarity of the histologic and biologic characteristics
of adenomas in the other segments of the GI tract, such
an adenoma-to-carcinoma carcinogenic process involv-
ing the rectum, ampulla, gallbladder, and biliary duct
occurs within the biliary tract\(^{27,28}\). Therefore, complete
resection of the lesion makes it possible to avoid devel-
opment of carcinoma\(^{29}\). It is difficult to differentiate
biliary adenomas from other malignant lesions with ra-
diologic imaging\(^{23}\). Predicting the presence of malignant
foci preoperatively is difficult. However, suspicion of
malignancy could be made by an experienced biliary en-
doscopist.

Appropriate management of these lesions in the distal
CBD has not been clearly defined. In 1992, Sturgis et al.\(^7\)
first reported that high-risk patients with tubulovillous ad-
enomas of the CBD were best treated by endoscopic re-
section but the risk of recurrence is high. Other treatment
options, such as local resection, are performed in high-risk
patients thought preoperatively to have benign tumors\(^{28}\).
Ariche et al.\(^16\) proposed that resection with free margins
of the CBD with lymph node dissection of the hepatodu-
odenal ligament for tumors in the mid part of the CBD
is an appropriate treatment option. If the remaining duct
length is inadequate, local resection is impossible and
PD should be considered mandatory in cases involving
cancer of the distal CBD. If malignancy is suspected or
the size is larger than approximately 2 cm, radical resec-
tion is needed. We considered the other treatment option,
duodenum preserving pancreatic head resection (DPPHR)
which was first introduced by Beger et al.\(^{27}\) for chronic
pancreatitis and has been increasingly used in neoplastic
lesions, cystadenoma, borderline lesions, and carcinoma in
situ\(^{28-30}\). However, we suspected that this tumor would be
malignant and performed PPPD considering the size, site
and clinical findings. Compared to Whipple-type resec-
tion, duodenum preserving pancreatic head resection has
benefits in regard to postoperative morbidity and mortal-
ity, maintenance of glucose metabolism, absence of delay
of gastric emptying, shorter hospital stay offers better
quality of life of patients. However, duodenum preserving
pancreatic resection has two major problems, incomplete
lymph node dissection and ischemia of duodenum and
has not been used yet as a surgical option of adenoma
of common bile duct. Maeda et al.\(^{31}\) reported that duode-
num preserving pancreatic resection in the treatment of
pancreatic metastasis from renal cell carcinoma should be
considered as radical lymph node dissection is not neces-
sary. And then, if the nature and extent of common bile
duct adenoma is suggestive of benign tumor and lymph
node enlargement is absent, preoperatively, DPPHR
should be considered in the treatment of common bile
duct adenoma.

In this case, colonoscopy has not been performed and
gastroscopy revealed no tumors in the stomach and
duodenum preoperatively. At the time of follow-up 8 mo postoperatively, colonoscopy and gastroscopy revealed multiple polyps in the rectum, sigmoid colon, and stomach. They were removed by endoscopic mucosal resection and confirmed as tubular adenomas with high grade dysplasia. In view of the risk of recurrence of adenomas, careful follow-up is in order.

Järvinen et al. [23] have reported biliary involvement in familial adenomatous coli patients. The present report is the first case of a tubulovillous adenoma with carcinoma in situ of the distal CBD and several tubular adenomas with high grade dysplasia of the GI tract confirmed 8 mo apart. We think that although adenoma of the biliary tract and GI tract did not exist concurrently, tubulovillous adenoma of the distal CBD may have developed by a similar mechanism to that of the GI tract. In conclusion, this case suggests that adenomas arising from the distal CBD can transform into carcinoma and support the existence of an adenoma-to-carcinoma sequence given that carcinoma in situ with an adenomatous lesion of the distal CBD and tubular adenoma of the GI tract adenoma ultimately developed.

REFERENCES


S- Editor Zhong XY  L- Editor Ma JY  E- Editor Ma WH