

Case Report

Distinguishing between periampullary carcinoids and carcinomas – is this possible preoperatively?

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It is difficult to distinguish between carcinoid tumors of the pancreatic head and periampullary region and carcinomas preoperatively. Between 1996 and 2002, 125 consecutive pancreaticoduodenectomies done by us for periampullary tumors (14 carcinoids, 111 carcinomas) were analyzed. Patients with carcinoid tumors had significantly younger mean age (48 vs. 54 years), longer history (32 vs. 8 weeks), lower serum total bilirubin levels (1.4 vs. 6.3 mg/dL) and on CT scan, had larger, well-localized tumors (5 cm vs. 2 cm). Their postoperative course was better with no mortality or major morbidity, whereas after resection for carcinoma 7 (6.3%) patients died and 30 (27%) had major postoperative complications. Thus, a tumor of this region in a young patient with indolent history, low bilirubin level and with CT scan depicting a large expansile lesion suggests a carcinoid. Such tumors may be safely resected with low postoperative morbidity and mortality and good long-term prognosis. [*Indian J Gastroenterol* 2006;25:206-207]

Tumor size of more than 3 cm has been reported to be an adverse prognostic factor for periampullary and pancreatic head carcinomas.¹ Patients with such tumors are therefore often offered only palliation. However some of these tumors are likely to be benign.

It is often difficult to distinguish benign tumors from carcinomas on imaging. The accuracy of side-viewing endoscopy and biopsy varies between 69% and 85%.^{2,3} The addition of endoscopic sphincterotomy does not add substantially to the diagnostic accuracy.³ Percutaneous needle biopsy carries its hazards.⁴ Endoscopic ultrasound is recommended when a mass lesion is suspected but not detected on CT.⁵

Owing to the slow growth of carcinoids, a nonoperative management may sometimes be preferred. However, these tumors have a fairly good prognosis after resection and the most common cause of death in these patients is metastatic disease.^{6,7,8} A recent study detailing aggressive surgical management of carcinoids reported a 52% 4-year survival even in patients with bilateral liver metastases.⁹

We analyzed our database of patients undergo-

ing pancreaticoduodenectomy (PD) to determine whether there were pre-operative characteristics that might distinguish between carcinoids and carcinomas of the periampullary and pancreatic head region.

Case Reports

Between 1996 and 2002, we performed 125 PD. The main pre-operative staging investigation during this period was contrast-enhanced CT scan with 5-mm sections. Side-viewing endoscopy with biopsy was performed in all patients with periampullary tumors. However a pre-operative biopsy confirmation of malignancy was not always done if imaging revealed a resectable lesion. Only patients with cholangitis and serum bilirubin level more than 15 mg/dL had pre-operative biliary drainage.

All patients underwent standard pancreatic resection. The pancreatico-jejunal anastomosis was made to an isolated Roux loop. End-to-end dunking (n=107) was the preferred method of reconstruction. Postoperative morbidity and mortality were recorded and follow up was through personal interview.

Histology of the resected specimens revealed 14 carcinoid tumors and 111 carcinomas. Of the patients with carcinoid tumors (mean age 48 [range, 33-68] years; 9 men), nine had tumors in the pancreas, 3 at the ampulla, and one each in the duodenum and common bile duct. All pancreatic neuroendocrine tumors were large (mean size 8 cm x 6 cm). The median duration of symptoms was 32 weeks. Abdominal pain with jaundice was the common symptom. Painless cholestatic jaundice was the presenting feature in non-pancreatic carcinoids. The patient with carcinoid of the common bile duct presented with fluctuating jaundice. No patient had symptoms of the carcinoid syndrome.

As compared to patients with carcinoma, those with carcinoids were younger, their symptoms were of longer duration and they were less jaundiced (Table). On CT scan carcinoids had a characteristically expansile growth pattern and were larger than carcinomas, which had an infiltrative growth into the surrounding tissues (Fig). Patients with carcinoids had a fairly uncomplicated postoperative course. Their postoperative stay in hospital was shorter. After operation none of the patients with carcinoid tumors died, whereas 7 (6.3%) of 111 with carcinoma died.

Follow up

One patient with carcinoid died 2.7 years after surgery due to liver metastases and another died 6 months after surgery due to lung metastases. Two patients have been

Table: Differential diagnosis between carcinoid (n=14) and adenocarcinoma (n=111) of periampullary region

	Carcinoids	Adenoca	p value
Age (y)	47 (33-68)	55 (26-78)	0.04
Sex (M:F)	6:1	10:4	
Duration of symptoms (weeks)	31 (2-104)	8 (1-52)	<0.001
Total bilirubin (mg/dL)	1.4 (0.9-6.3)	6.3 (1-26)	0.02
Growth pattern on CT	Expansile	Infiltrative	
<i>Operative findings</i>			
Size (mean, cm)	5 (1-10)	2 (2-7)	<0.001
Time (min)	414 (240-540)	426 (300-630)	0.9
Growth pattern	Expansile	Infiltrative	
Blood transfusion (units)	3 (1-5)	2.7 (1-8)	0.29
<i>Outcome</i>			
Postoperative stay (days)	9 (7-13)	13 (6-46)	0.02
Pancreatic fistula	0	15	0.17
Delayed gastric emptying	0	9	0.5
Mortality (no.)	0	7	0.54

lost to follow up. The remaining 10 patients are well between 10 and 39 months after surgery.

Discussion

Our results suggest that young patients with pancreatic head or periampullary masses who have a long history, mild jaundice and large, well-localized, expansile tumors on CT scan may have carcinoids. This experience is similar to that of Maurer *et al*⁷ who reviewed 29 cases in the literature. Carcinoid tumors generally have slow growth and late invasion of adjacent organs. Despite their large size these tumors can be safely resected with low postoperative morbidity and mortality and good long-term prognosis. In contradistinction, pancreatic adenocarcinomas become unresectable early. This is apparent in the current series with no adenocarcinoma larger than 5 cm found to be resectable.

There are important clinical implications of our study. A major extirpative procedure in this group with large but benign pancreatic tumors, although of greater magnitude than a bypass, is followed by fewer

complications and better long-term outlook, with 5-year survival rates between 40% and 80%.^{7,8} The necessity for a biopsy confirmation with its uncertainties or attendant risks is also obviated. Our findings may be applicable to other benign tumors like adenomas as well.

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Paper presented at the 7th Biennial Asian HBP Conference, Chennai, 2003

Received September 19, 2005. Received in final revised form April 11, 2006. Accepted May 19, 2006



Fig: Contrast-enhanced CT scan depicting characteristics of carcinoid (left) and carcinoma of head of pancreas