Primary Hepatic Carcinoid Tumor: Case Report and Literature Review

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INTRODUCTION
Carcinoids are rare tumors originating from Kulchitsky cells in the crypts of Lieberkuhn in the gut and are the most common gastrointestinal neuroendocrine tumors.¹ The term "carcinoid" originated from karzinoide, which means carcinoma-like, as given by Siegfried Obendorfer in 1907.² Carcinoids behave like benign tumors, but microscopically resemble carcinomas and comprise 0.66% of all malignancies.³ The incidence rates of carcinoids are 55% and 30% in the gastrointestinal tract and bronchopulmonary system, respectively, and within the gastrointestinal tract, they occur most commonly in the small intestine (45%), rectum (20%), appendix (17%), colon (11%), and stomach (7%).⁴ Carcinoid tumors secrete 5-hydroxyindoleacetic acid (5-HIAA) and bronchoconstriction, and occasional valvular heart disease.⁵ Carcinoids may be classified as typical [well differentiated hydroxytryptamine (5-HT), a tryptophan derivative that causes carcinoid syndrome, characterized by loose motion, flushing, with a clear histological pattern (e.g., insular, trabecular, glandular, or mixed)] or atypical (nuclear atypia, necrotic foci, and high mitotic figures).⁶ The diagnosis of carcinoid tumors is made by determining the urine levels of 5-hydroxyindoleacetic acid (5-HIAA) (specificity, 100%; sensitivity, 73%).⁷ Chromogranin A (CgA) levels are increased in 85-100% of carcinoid tumors (specificity, 98.4%; sensitivity, 62.9%).⁸,⁹,¹⁰

Primary carcinoid tumors of the liver are extremely rare; only 94 cases have been reported thus far,¹¹ with no apparent association with preexisting liver disease. The first case of a liver carcinoid was described by Edmondson in 1958, and its origin remains uncertain.¹¹ The mutating cells originate from the ectopic pancreatic or adrenal tissue in the hepatic parenchyma, or from neuroendocrine cells located in the intrahepatic biliary epithelium.¹² Moreover, it was proposed that the chronic inflammation of the bile...
canaliculi can cause intestinal metaplasia, which predisposes the development of neuroendocrine tumors. Liver carcinoids usually progress to a large size on diagnosis. We present the case of a huge primary liver carcinoid in a 70-year-old man who presented at our hospital with non-specific abdominal discomfort.

**CASE REPORT**

A 70-year-old male patient with hypertension presented to our hospital with complaint of abdominal pain and fullness after meal since one year. The laboratory test results showed normal complete blood count and liver function tests, negative serology for hepatites, slight increase in canicular enzymes and tumor markers within normalcy.

Computed tomography demonstrated large well defined, hypodense lesion seen involving segment V, VI and VIII of right lobe of liver which shows enhancement in arterial phase and progressive wash out in venous and delayed phase. Lesions is causing indentation over GB and splaying of right portal vein bifurcation. Lesion measures 11.6 x 7.9 x 10.7 cm. p/o. malignant mass lesion appears likely. Proper hepatic artery is noted. (Figure 1)

**Figure 1: Axial computed tomography image – arterial phase hypodense lesion seen involving segment V, VI and VIII of right lobe of liver**

The patient was submitted to ultrasound-guided percutaneous liver biopsy. The pathologic report described neoplasm of undetermined histogenesis, suggesting carcinoid tumor, and immunohistochemistry confirmed the diagnosis. The investigation was complemented with PET-CT Scan® that specifically demonstrated hyper metabolic lesion involving most of the right lobe of liver consistent with carcinoid.

To rule out the possibility of metastatic carcinoid tumor in the liver, more investigations were performed, including upper and lower gastrointestinal series, Bronchoscopy. All these investigations were negative.

He underwent right hepatectomy, and an irregular extensive lesion occupying the whole right lobe was evident in the intraoperative period (Figure 3). No ascites was noted and the liver was not cirrhotic. Extensive abdominal exploration showed no any other site of primary tumor.

**Figure 2: PET CT Scan: Hyper metabolic lesion involving most of the right lobe of liver consistent with carcinoid.**

The patient progressed well and was discharged on postoperative day 7. The pathological examination showed a malignant neoplasm with neuroendocrine differentiation and positive immunohistochemistry for synaptophysin, vimentin, chromogranin and KI-67, thus Confirming the diagnosis of primary hepatic carcinoid tumor.

**DISCUSSION**

Primary liver carcinoid is a rare entity, and most neuroendocrine tumors metastasize to the liver. Carcinoid syndrome occurs in < 10% of carcinoids. Primary liver carcinoid with carcinoid syndrome is extremely rare. Primary hepatic carcinoids can arise from dispersed
neuroendocrine cells in the intrahepatic biliary epithelium and possibly from chronic inflammation in the biliary system or ectopic adrenal or pancreatic tissues in the liver. Imaging analyses such as abdominal ultrasound, a non-invasive method, are used for detecting solid lesions with cystic liver components. Dynamic abdominal CT scan showed enhanced and low-density masses in the early and late phases. Hepatic carcinoid was finally diagnosed from histological and immunohistochemical results. Carcinoid localization is performed with an octreoscan [somatostatin receptor scintigraphy is superior to CT or MRI (sensitivity, 90%)]. Metaiodobenzylguanidine scintigraphy is an alternative to an octreoscan. In a review of 94 primary hepatic carcinoids, the carcinoids occurred commonly in middle-aged patients (mean age, 49.8 years) and slightly more commonly in women (58.5%). The most common complaint was abdominal pain (44%); 13.1% were asymptomatic, and the overall mortality rate was 25%. Carcinoids require a multidisciplinary approach with surgery as the primary treatment modality, hepatic chemoembolization, and medical therapy. Surgical resection of the primary hepatic carcinoid is the treatment of choice in approximately 85% patients. In our patient, a right hepatectomy was performed as the primary treatment. An extensive search for carcinoids was performed, but no carcinoids were found outside the liver. Radiofrequency ablation and hepatic chemoembolization significantly improved hepatic metastases or unresectable tumors in some studies. Radiolabeled somatostatin analogs, which act as vehicles to guide radioactivity to carcinoid metastases, have also shown improvement. Five-year survival rates of 88.3% for rectal, 73.2% for bronchopulmonary, and 71% for appendicular carcinoids have been reported in 13,715 carcinoid cases. Knox et al. reported postoperative 1-, 5-, and 10-year survival rates for primary hepatic carcinoid patients of 88%, 80%, and 68%, respectively. Our patient has been followed up for recurrence or carcinoid development in other organs until date, but none was detected.

CONCLUSION
Primary hepatic carcinoid is a rare disease that is not commonly associated with carcinoid syndrome symptoms; therefore, it should be diagnosed after an extensive search for primary in other organs. The ultimate diagnosis should be made after reviewing histological and immunohistochemical results.

REFERENCES
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