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March 2013

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“Google can bring you back 100,000 answers, a librarian can bring you back the right one.”
Neil Gaiman
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Primary hepatic neuroendocrine tumours are rare tumours effecting relatively young patients. As metastatic neuroendocrine tumours to the liver are much more common, extensive investigations are crucial to exclude a primary tumour elsewhere. We report a case of a 27 year old woman who presented with fatigue, increased abdominal girth and feeling of early satiety and bloating. Extensive work up failed to show tumour at another primary site. Hepatic artery embolization showed no effect, so the patient underwent total heptectomy and live-donor liver transplant. Grossly the tumour measured 27 cm. Microscopic examination showed bland, monomorphic cells growing in tubuloglandular and trabecular growth patterns. Cells were positive for neuroendocrine (synaptophysin, chromogranin, CD56) and epithelial markers (MOC31, CK7, CK19). Cytoplasmic dense neurosecretory vesicles were seen on ultrastructural examination. Based on the Ki-67 rate, mitotic count, lack of marked nuclear atypical and absence of necrosis, a diagnosis of primary neuroendocrine grade 2 was conferred.


Primary hepatic signet ring cell neuroendocrine tumor: a case report with literature review.
Primary hepatic signet ring cell neuroendocrine tumor is extremely rare and is characterized by distinct intracytoplasmic hyaline vacuoles that are mucin negative and cytokeratin positive. The unique histological features may cause difficulty in diagnosis and delay patient care. Here the authors report a 49-year-old man with an incidental finding of a 2.7 cm liver mass in the absence of chronic liver disease. The resected tumor was grossly unencapsulated but well demarcated with friable tissue texture. Microscopically, the entire tumor consisted of sheets of monotonous cells separated by delicate microvasculature. The tumor cells had granular chromatin, inconspicuous nucleoli, and eosinophilic cytoplasm. Many of the tumor cells had eccentric, pale intracytoplasmic vacuoles resembling signet ring cells in adenocarcinoma. Immunohistochemical studies showed that the tumor cells were positive for neuroendocrine markers and that the intracytoplasmic vacuoles were negative for mucin but strongly positive for cytokeratins. Careful systemic search including Octreoscan scintigraphy (Mallinckrodt Medical, Inc., St. Louis, MO) and capsule endoscopy failed to reveal any other tumors. A diagnosis of primary hepatic signet ring cell neuroendocrine tumor was established. Ten months after surgery, the patient is well without any other detectable tumor on radiology. Serological neuroendocrine markers are also within normal limits. REQUEST FROM LKRS
Review

Primary hepatic neuroendocrine tumor: an unusual cystic presentation.
Primary neuroendocrine tumors of the liver are exceedingly rare and unlike metastatic neuroendocrine tumor rarely cause carcinoid syndrome. There are only about 60 such cases reported in the current literature. We present a case of a 57-year-old male with a primary hepatic neuroendocrine tumor which presented as cystic mass and successfully resected. The case presented required meticulous radiological, histopathological, and immunohistochemical work-up to rule out an occult extrahepatic malignancy with hepatic metastasis to confirm the primary nature of hepatic tumors. Here we intend to put forward a review of the current literature regarding the diagnosis, pathology, and management of this disease.

REQUEST FROM LKRS

Review

Primary carcinoid tumors of the liver.
BACKGROUND:
Primary carcinoid tumors of the liver are uncommon and rarely symptomatic. The diagnosis of primary hepatic etiology requires rigorous workup and continued surveillance to exclude a missed primary.
CASE PRESENTATION:
We present a case of a 62-year-old female with a primary hepatic carcinoid tumor successfully resected, now with three years of disease-free follow-up. We present a review of the current literature regarding the diagnosis, pathology, management, and natural history of this disease entity.
CONCLUSION:
Primary carcinoid tumors of the liver are rare, therefore classifying their nature as primary hepatic in nature requires extensive workup and prolonged follow-up. All neuroendocrine tumors have an inherent malignant potential that must be recognized. Management remains surgical resection, with several alternative options available for non-resectable tumors and severe symptoms. The risk of recurrence of primary hepatic carcinoid tumors after resection remains unknown.

http://www.wjso.com/content/6/1/91
**Review**

Primary hepatic neuroendocrine tumor: successful hepatectomy in two cases and review of the literature.


BACKGROUND/AIMS: Primary hepatic neuroendocrine tumor represents an extremely rare clinical entity with only very few cases having been reported to date.

METHODS: The case histories of 2 patients with presumably primary hepatic neuroendocrine tumor were analyzed and a complete follow-up obtained. The literature was reviewed to provide comprehensive data collection.

RESULTS: Both patients underwent partial hepatic resection. Histomorphologic diagnosis revealed a neuroendocrine tumor in both cases. Extensive preoperative as well as intra- and postoperative search for the primary tumor did not identify another site of neuroendocrine tumor tissue. Six and ten years after hepatic segmentectomy, the 2 patients are alive and show no clinical signs of malignancy. Their most recent thorough follow-up included computed tomography and somatostatin receptor scintigraphy. Neither a nonhepatic primary neuroendocrine tumor site nor recurrent disease was found in the 2 patients. The literature review resulted in a complete survey of all previously reported cases of primary hepatic neuroendocrine tumors.

CONCLUSION: We conclude that the liver was the primary site of the neuroendocrine tumor in both patients. Radical surgery was successfully performed as the only treatment option with curative intention. **REQUEST FROM LKRS**

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Ten years survival with excellent outcome after living donor liver transplantation from 70 years old donor for primary hepatic neuroendocrine carcinoma: Case report.


BACKGROUND: Primary hepatic carcinoid tumors (PHCT) are rare entities; they are even rarer than extrahepatic neuroendocrine gastrointestinal tumors with only about 95 cases reported in the literature. An extrahepatic primary tumor must be excluded to confirm the diagnosis of PHCT.

CASE PRESENTATION: We report a case of a 42-year-old male patient with a primary hepatic neuroendocrine carcinoma, who successfully underwent living donor liver transplantation from his 70 years old mother with 10 years follow-up. Both donor and recipient are still alive and in the good health.

CONCLUSION: Living liver donation from elderly donors for the patients with irresectable neuroendocrine liver malignancies can be as safe as deceased donation or liver donation from young donors (age < 50). Living donation from elderly donors might significantly expand the donor pool for patients with liver neuroendocrine tumors (NET) and potentially reduce waiting list mortality. Especially young patients with irresectable NET can benefit from this option. However, case-control studies are needed to verify the advantage of living liver transplantation (LDLT) for the patients with irresectable liver NET and to define selection criteria for these patients.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3267280/
Primary hepatic neuroendocrine tumor: Five cases with different preoperative diagnoses.
Neuroendocrine tumors, also known as carcinoid tumors, behave like benign tumors; however, they show the characteristics of carcinoma. While more than 80% of the neuroendocrine tumors found in the liver are metastatic, primary hepatic neuroendocrine tumors are very rare. Five patients with hepatic mass who admitted to our clinic between August 2003 and July 2007 were treated surgically. Ultrasonography, computerized tomography and magnetic resonance imaging were performed in all patients. Endoscopy and colonoscopy were conducted to exclude malignancy of other sites. Hepatectomy was carried out in all patients. Diagnosis was confirmed with immunohistochemical examination. The five patients treated surgically were diagnosed as primary hepatic neuroendocrine tumor histopathologically. Abdominal pain was the most common complaint of all patients. Hepatectomy was conducted in all patients due to tumors originating from the liver lobes. Only one patient (Case 2) underwent transarterial chemoembolization before hepatectomy to reduce tumor bleeding. Owing to tumor recurrence on the left lobe of the liver in Case 2, transarterial chemoembolization was performed four years after hepatectomy. R0 resection was achieved in two patients (Cases 1 and 3). In conclusion, primary hepatic neuroendocrine tumors are very rare and asymptomatic tumors. Thus, high-sensitive laboratory and imaging examinations are required. At present, hepatectomy remains the main treatment for primary hepatic neuroendocrine tumor.

Liver resection for primary hepatic neuroendocrine tumours: report of three cases and review of the literature.
Primary neuroendocrine tumours are rare especially in the liver, which is more often site of metastatic tumours. We report three cases of primary hepatic neuroendocrine tumours, which underwent hepatic resection. Review of the diagnostic and therapeutic approaches to these tumours are discussed.

Primary and secondary hepatic manifestation of neuroendocrine tumors.
BACKGROUND: In comparison with most other malignancies, in the treatment of metastatic neuroendocrine tumors one also has to consider endocrine symptoms and natural progression of disease. Since hepatic metastasis predominates and endocrine symptoms correlate with functional tumor mass, hepatic resection may improve prognosis or even cure patients.
PATIENTS AND METHODS: We reviewed 41 consecutive patients with metastatic neuroendocrine tumors and four patients with primary hepatic disease presenting between 1989 and 1999. The neuroendocrine tumors were classified according to their origin, pattern of metastasis, endocrine activity, and histology. Operative therapy including hepatic resections of different extent, liver transplantation, and removal of the primary tumor was analyzed. The median survival after initial diagnosis and after hepatic resection were major parameters of outcome.
RESULTS: There were 26 low-grade malignant, 12 high-grade malignant, 2 biphasically differentiated neuroendocrine carcinomas, and 5 pancreatic endocrine tumors. Hepatic resections were performed in 25 patients, resections of the primary tumor in 40 patients. The median survival after initial diagnosis was 49 months; 50.5 months in patients with hepatic resection versus 47 months in those with no liver surgery.

CONCLUSION: Hepatic resection improved the outcome of patients with liver metastasis due to neuroendocrine tumors tendentially but not significantly.

Primary hepatic carcinoid and neuroendocrine carcinoma: clinicopathological and immunohistochemical study of five cases.
Pilichowska M, Kimura N, Ouchi A, Lin H, Mizuno Y, Nagura H.
Primary hepatic carcinoid and neuroendocrine carcinoma (NEC) are rare tumors. We experienced three carcinoids and two NEC originating in the liver during the past 25 years and attempted to elucidate the clinicopathological and immunohistochemical features of these tumors. The patients had no endocrine symptoms despite two of them having elevated plasma serotonin. Three of the five patients died of the tumor after operation with an average survival time of 20.6 months. All tumors were large (up to 26 cm in diameter), four of them solitary and one multinodular, and were not associated with liver cirrhosis. The carcinoid tumors showed insular, trabecular or glandular arrangement of argentaffin cells, whereas in the NEC this histological pattern was distorted. Immunohistochemically the tumors showed expression of chromogranin A (all cases), chromogranin B (three cases), pancreastatin and chromostatin (four cases, respectively), prohormone convertase PC3 (three cases), carcinoembryonic antigen (CEA) and CA19-9 (two cases), cytokeratin 56 kDa (three cases), 160 kDa neurofilament (two cases) and neuron-specific enolase (two cases). Serotonin and glucagon were sporadically detected in two tumors. The most useful marker to confirm the diagnosis was chromogranin A, which was cleaved to pancreastatin and chromostatin in the tumor tissue, and was more reliable than other markers of neuroendocrine differentiation.

Primary neuroendocrine carcinoma of the liver: difficult diagnosis of a rare neoplasm.
Ferrero A, Gallino C, D’Aloiso G, Gandini G, Garavoglia M.
Primary neuroendocrine neoplasms of the liver are extremely rare: about 30 cases only have been described in the literature. We report the case of a 42-year-old woman with a ten-year evolution. According to the previously reported cases, primary neuroendocrine carcinoma of the liver is usually multicentric, often mimicking liver metastases. The demonstration of the hepatic origin of a neuroendocrine carcinoma is often arduous. A careful surgical exploration and a prolonged follow-up are mandatory. The treatment of choice is surgical resection when possible. For progressive and unresectable disease, hepatic arterial chemoembolization may be considered. However, the prognosis of liver neuroendocrine tumours is much more favorable than that of hepatocellular carcinoma and progression has to be demonstrated before instauration of potentially harmful therapies.