Case Report

Hepatocellular carcinoma directly invading the duodenum

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ABSTRACT

Recurrent gastrointestinal bleeding from hepatocellular carcinoma (HCC) invading the duodenum is very rare. We present a case of 50-year-old male who was admitted with a history of recurrent upper gastrointestinal tract (UGIT) bleeding, weight loss and anemia. The patient was known to have a chronic hepatitis C. Endoscopic examination showed grade-2 non-bleeding esophageal varices, and a large ulcerated duodenal mass partially obstructing the duodenal bulb outlet and causing recurrent UGIT bleeding. Pathological evaluation of the mass revealed HCC.

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Hepatocellular carcinoma (HCC) is one of the most common cancers in the world, especially amongst Asians, where over 1400 new cases are diagnosed annually among the Chinese of Hong Kong.[1] Extrahepatic metastasis of HCC is a very common and has been found in 50-90% of cases at autopsy. The lungs (37%), regional lymph nodes (12%), abdominal organs (12%), diaphragm (6%), adrenal glands (5%), and bones (3%) are the most frequently involved metastatic sites.[2] Hepatic cancer uncommonly infiltrates directly into the gastrointestinal tract (GIT) and this is evident at a rate of 4-12% of cases at autopsy.[3] Direct invasion is the most common mode of infiltration.[3] Most gastrointestinal (GI) secondaries from HCC are without clinical manifestations, and are usually found incidentally at autopsy[4] or during laparotomy.[3] Involvement of the duodenum by direct invasion of HCC occurs in 0.5-2% of patients.[3,5] Hepatocellular carcinoma may also extend to the stomach,[3,6] small bowel,[3,4] and colon[7] mostly by direct extension to the contiguous GIT or adhesion to the serosal side of the tumor. Upper gastrointestinal tract (UGIT) bleeding is a well known complication of HCC and frequently leads to death. The bleeding usually results from rupture of esophageal varices or oozing from congested gastric mucosa in those with portal hypertension.[1] Many patients with HCC have portal hypertension due to associated liver cirrhosis or tumor thrombus in the portal veins. Tumor invasion of the portal venous system accounts for the majority of the variceal bleeding, which had been detected by ultrasound examination in 76% of bleeders.[1] Non-variceal bleeding, which is most often due to peptic ulcer disease, congestive gastropathy and direct tumor invasion accounts for the majority of deaths from bleeding in HCC (53%), while GI bleeding due to direct tumor invasion alone is infrequent, resulting in 5.4% of deaths in patients with HCC.[1] Other causes of hemorrhage are gastric erosions, duodenitis, and esophagitis.

Case Report. A 50-year-old male Egyptian expatriate was admitted to Al-Ain Hospital, Al-Ain, United Arab Emirates with a one month history of upper abdominal pain, anorexia and frequent

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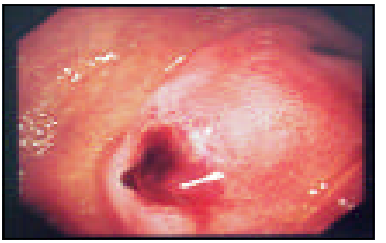

Figure 1

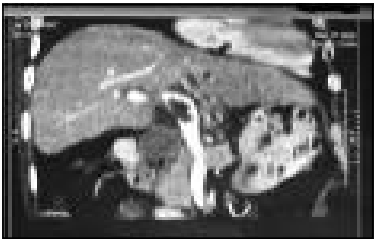

Figure 3

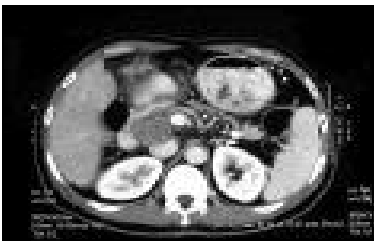

Figure 2

Figure 1 - The duodenal bulb partially obstructed by a hard mass bulging from outside. Located postero-medially and fixed to the mucosa, with 2 bleeding ulcers breaking at the surface of the mucosa.

Figure 2 - A computerized tomography of the abdomen showing a rounded solid mass, measuring 30 x 36 mm and obliterating the lumen of the first part of the duodenum.

Figure 3 - Coronal and sagittal reconstruction of the computerized tomography scan of the abdomen showing continuity of the liver mass to the duodenum.

episodes of melena. He lost 10 kg in weight in 4 months prior to admission. He was known to have diabetes mellitus, well-controlled on insulin, and chronic viral hepatitis C was diagnosed 11 years earlier. On examination, he was pale, with mild tenderness in the epigastrium, but no stigmata of chronic liver disease or masses detected. His investigations were as follows: hemoglobin 9.4 g/dl, mean corpuscular volume 92 fl, mean corpuscular hemoglobin 30.5 pg, hematocrit 28.4%, white blood count 5.8 x 10^9/ul, platelet count 278 mm^3/ul, erythrocyte sedimentation rate 88 mm in the first hour, blood sugar 208 mg/dl, plasma protein 8.2 g/dl, serum albumin 2.8 g/dl, alanine aminotransferase 87 iu/L, aspartate aminotransferase 271 iu/L, alkaline phosphatase 243 iu/L (normal range 42-122), Alpha-fetoprotein was elevated, 322 ng/ml (normal range <10.9), anti-hepatitis C virus (HCV) was reactive by western blot and HCV-RNA was 7.5 meq/ml (cutoff 0.20 meq/ml).

Upper gastroduodenoscopy was attempted in 2 separate occasions following adequate fasting with no success, because each time the stomach was found to be full of food debris. It was decided to maintain him on prolonged fasting with intravenous fluids. He underwent endoscopy at the third attempt, which showed grade 2 esophageal varices with no stigmata of recent bleeding. There were no fundal varices. The gastric mucosa showed pan gastritis, positive for *Helicobacter pylori*, by rapid urease test (Campylobacter-like organism test). The duodenal bulb was partially obstructed by a mass bulging from outside postero-medially. The mass was hard and fixed to the mucosa in some areas, and there were 2 ulcers breaking at the surface of the mucosa. There was a small clot on the surface of one ulcer, with a bleeding point on the other side (**Figure 1).** A biopsy from the edges of the ulcers showed poorly differentiated hepatocellular carcinoma. A computerized tomography (CT) scan of the abdomen using a multi-slice spiral with both oral and intravenous contrast showed a large mass involving both lobes of the liver contiguous with another solid mass, measuring 30 x 36 mm and extending posteriorly to the descending part of the duodenum. The rounded mass was obliterating the lumen of the first part of the duodenum (**Figure 2**). Coronal and sagittal reconstruction revealed continuity of the liver mass to the duodenum (**Figure 3**). The liver was also noted to be cirrhotic. The

tumor also noticed to invade locally the main branch of the portal vein and the distal part of the superior mesenteric vein leading to their thrombosis. A biopsy from the hepatic mass was performed under CT scan guidance, and this showed histological findings similar to the duodenal mass such as poorly differentiated HCC. Treatment options were discussed with the patient, but since he was an expatriate working outside his country, he felt that he should return home and receive treatment with the support of family members. We have, unfortunately, no further follow up to report.

Discussion. Upper gastrointestinal bleeding is one of the most common complications of HCC, most often resulting from rupture of esophageal varices. Yeo et al,[1] found that even though 85% of cases with HCC have underlying liver cirrhosis and portal hypertension, only 47% of patients manifested variceal bleeding, while 53% were of non-variceal origin. Tumor invasion of the portal venous system was however detected in a majority of the variceal bleeders, which had added to the risk of bleeding. Direct invasion of HCC into the GI tract can result in bleeding. Gastric or duodenal invasion leads to upper GI hemorrhage, whereas the small bowel or the colonic invasion can result in frank lower GI bleeding or occult blood loss. Chen et al,[3] and Urata et al,[4] postulated that direct invasion of the duodenum could result from tumor adherence to the GI tract following a therapeutic procedure such as transcatheter arterial embolization (TAE) or intra-arterial chemotherapy. Chen et al,[3] reported 5 cases of duodenal invasion by HCC, all of which were observed after TAE. Our patient had not undergone any surgical or vascular intervention to account for local invasion of the tumor. This supports the observation that in some cases direct invasion of the duodenum can occur without any preceding TAE or other intervention. Upper gastrointestinal endoscopy and biopsy is helpful for the diagnosis of HCC invading the GI tract. Our patient, who was not known to have HCC, was first diagnosed at endoscopy when a large hard submucosal duodenal mass with some ulceration was identified. Following the biopsy report from the duodenal mass which documented metastasis from HCC, a CT scan of the abdomen was performed, which revealed the hepatic mass that directly invading the duodenum.

Park et al,[8] evaluated the radiological findings in 18 patients with HCC and secondary GI tract involvement by CT scan studies. They found that 12 of the patients (67%) had direct invasion of the bowel from a contiguous primary tumor, while only 3 patients had hematogenous metastasis and one had peritoneal seeding. Direct invasion from the primary tumor is the most common mode of gastrointestinal spread and was detected radiologically in our patient by multi-slices spiral CT scan of the abdomen (**Figure 3**). There are no known specific endoscopic features of hepatocellular tumor invading the duodenum,[9] but various findings have been described. These include ulcerated duodenal tumors resembling liver parenchyma, polypoid tumors[3] and a large submucosal tumor of the bulb obstructing the lumen as in our patient (**Figure 1**). Most patients with HCC have liver cirrhosis and possibly impaired liver function, which make these patients poor candidates for surgical intervention. The treatment options available to control bleeding in these patients and reduce the size of the obstructing duodenal tumor are radiotherapy,[10] TAE and adjuvant intra-arterial chemotherapy.[3] Surgical resection if offered early may result in improved survival.[6,9] Our patient made his own decision and returned to his home country for palliative measures in the company of his family.

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