CASE REPORT

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Endoscopic Treatment of Duodenal Bleeding Caused by Direct Hepatocellular Carcinoma Invasion with an Ethanol Injection

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We report a case of a man who developed duodenal bleeding caused by direct hepatocellular carcinoma (HCC) invasion, which was successfully treated with endoscopic ethanol injection. A 57-year-old man with known HCC was admitted for melena and exertional dyspnea. He had been diagnosed with inoperable HCC a year ago. Urgent esophagogastroduodenoscopy (EGD) showed two widely eroded mucosal lesions with irregularly shaped luminal protruding hard mass on the duodenal bulb. Argon plasma coagulation and Epinephrine injection failed to control bleeding. We injected ethanol via endoscopy to control bleeding two times with 14 cc and 15 cc separately without complication. Follow-up EGD catched a large ulcer with necrotic and sclerotic base but no bleeding evidence was present. He was discharged and he did relatively well during the following periods. In conclusion, Endoscopic ethanol injection can be used as a significantly effective and safe therapeutic tool in gastrointestinal tract bleeding caused by HCC invasion. **(Gut Liver 2012;6:122-125)**

Key Words: Endoscopic treatment; Ethanol injection; Duodenal bleeding; Hepatocellular carcinoma

INTRODUCTION

Gastrointestinal (GI) tract bleeding in patients with hepatocellular carcinoma (HCC) is a common malady. The causes of GI tract bleeding in patients with HCC include varixes, peptic ulcers, gastropathy, Mallory-Weiss syndrome and tumor involvement of the GI tract.[1] Bleeding from the GI tract by direct tumor invasion is very unusual and it has a very poor prognosis.[2-4] Treatments that include surgery, transcatheter arterial chemoembolization (TACE) and local injection often fail to stop the bleeding. Here we report on a case of a patient who developed duodenal bleeding that was caused by direct HCC invasion and this was successfully treated with endoscopic ethanol injection.

CASE REPORT

A 57-year-old man with known HCC was admitted for melena and exertional dyspnea that he'd experienced for the previous 3 days. He did not drink alcohol and the serologic markers for hepatitis B surface antigen and anti-hepatitis C virus were negative. He had been diagnosed with inoperable HCC one year previously and he had undergone TACE on a monthly basis. However, the HCC was not properly controlled and portal vein thrombosis developed (Fig. 1A and C). At the time of the diagnosis of HCC, esophagogastroduodenoscopy (EGD) showed only a duodenal ulcer scar on the bulb without varixes. On admission, his blood pressure was 99/54 mm Hg (normal, 120/80 mm Hg) and his pulse rate was 94/min (normal, 60 to 100/min). The physical examination showed paled conjunctiva and one palm-breadth of hepatomegaly below the costal margin. The laboratory tests were as follows: hemoglobin, 5.5 g/dL (normal, 12.6 to 17.4 g/dL), hematocrit, 16.8% (normal, 39% to 50%), white blood cell count, 5,150/μL (normal, 4,500 to 11,000/μL), platelet count, 104,000/μL (normal, 150,000 to 400,000/μL), serum protein, 6.1 g/dL (normal, 6.0 to 8.2 g/dL), albumin, 3.6 g/dL (normal, 3.2 to 5.4 g/dL), aspartate transaminase, 116 IU/L (normal, 0 to 50 IU/L), alanine transaminase, 133 IU/L (normal, 0 to 45 IU/L), and total bilirubin, 0.39 mg/dL (normal, 0.0 to 1.6 mg/dL). Urgent EGD showed two widely eroded mucosal lesions with an hard, irregularly shaped mass on and protruding into the lumen of the duodenal bulb (Fig. 2A). Under the impression of direct

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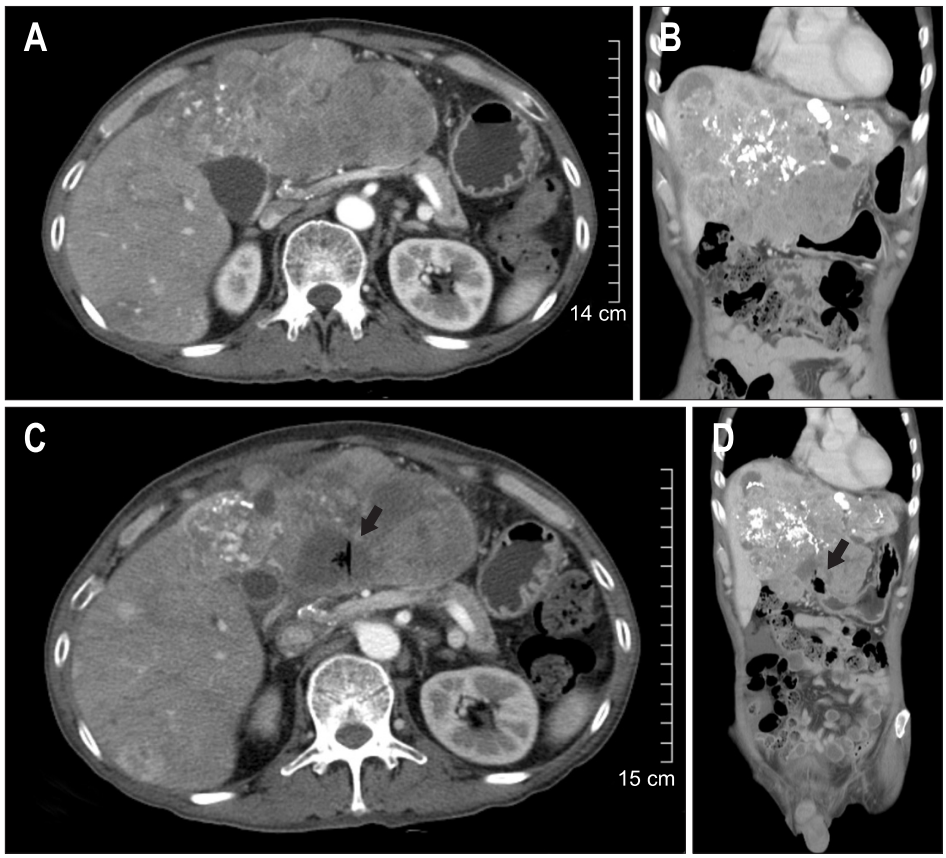

Fig. 1. (A, B) A bulky hepatocellular carcinoma mass compresses the duodenum. (C, D) A tumor necrosis approximately 4 cm in diameter at the ethanol injection site (arrow).

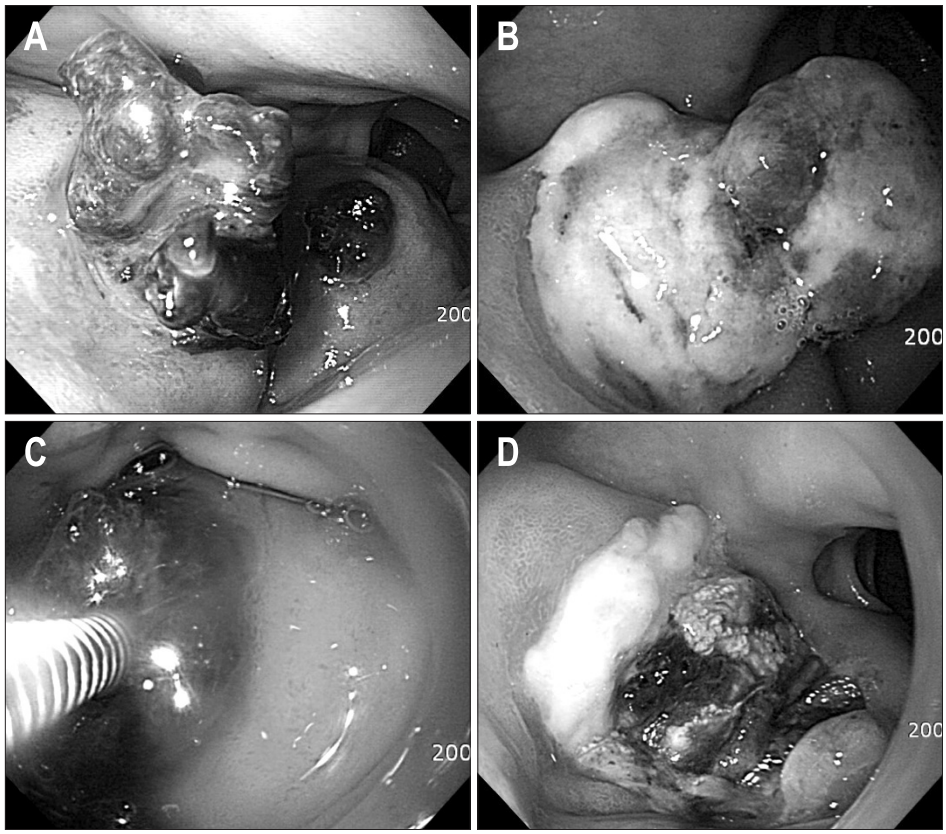

Fig. 2. (A) A luminal protruding hepatocellular carcinoma mass on the duodenal bulb. (B) The regrowth of the mass with oozing on the duodenal bulb. (C) Endoscopic ethanol injection at the base of the mass. (D) Follow-up esophagogastroduodenoscopy shows the necrosis of the mass on the duodenal bulb.

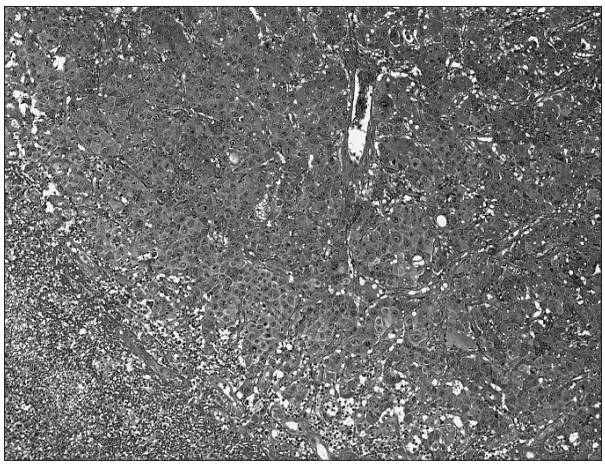

Fig. 3. The tumor cells are hyperchromatic and pleomorphic with enlarged nuclei and show a trabecular arrangement (H&E stain, ×100).

invasion of HCC into the duodenum, we performed snaring polypectomy for argon plasma coagulation (APC) and histological confirmation. The histologic findings showed duodenal invasion of HCC (Fig. 3). His vital signs and hemoglobin level were improved after APC and blood transfusion. However, 15 days later, he again complained about melena and dyspnea. EGD revealed re-growth of the duodenal mass with oozing (Fig. 2B). We injected ethanol (95%) via endoscopy to control the cancer bleeding two times with doses of 14 and 15 cc, respectively (Fig. 2C). Fourteen days later, follow-up EGD noticed a large ulcer with a necrotic and sclerotic base, but there was no evidence of bleeding (Fig. 2D). Follow-up abdominal computed tomography showed tumor necrosis in segment 4, which is where the ethanol had been injected (Fig. 1B and D). He was discharged and was doing relatively well during the following period. Sadly, the HCC progressed and he died of rebleeding and hepatic failure 3 months later.

DISCUSSION

HCC is one of the most common malignancies in the world and it is showing an increasing incidence in industrialized countries. Extrahepatic metastasis of HCC occurs in 30% to 75% of the patients via three routes: direct invasion and the hematogenous and lymphogenous routes.[5] The most common metastatic site is the lung, followed by regional lymph nodes, bones, heart and adrenal glands.[6] GI tract involvement is rare, and this is seen in only 0.5% to 2% of the cases.[5,7] The most commonly involved site of the GI tract is the duodenum, followed by the stomach, colon, and jejunum.[7,8] Patients with HCC and GI tract involvement were generally in an advanced stage of disease. A bulky tumor burden and persistent occult or frank GI tract bleeding are the main clinical manifestations of GI tract involvement of HCC.[5] Tumor invasion of the GI tract should be considered in the HCC patients with GI tract bleeding, and particularly in the cases without esophageal varices. Treatments that include surgery, TACE and local injection have been carried out, but attempts to control this bleeding commonly fail. Therefore, these patients have a dismal prognosis. None of these patients have survived longer than 3 months except for two reported cases of HCC invading the duodenum; external beam radiotherapy was performed in one case[9] and TACE was performed in another[3] to control the bleeding. Surgery may offer significantly prolonged survival, yet most patients with HCC have liver cirrhosis and a poor liver function, and so these patients are not good candidates for resection. TACE may be an efficient treatment for GI tract bleeding. Traditionally, it is used for GI tract bleeding when endoscopic hemostasis is unsuccessful. In this case, the patient had undergone TACE on a monthly basis, but his HCC was not properly controlled and portal vein thrombosis then developed. Therefore, TACE might not have controlled the bleeding. We controlled the bleeding via endoscopic ethanol injection. Percutaneous ethanol injection (PEI) was the first percutaneous treatment used in clinical practice and it is recommended as the standard ablation treatment for early stage nonsurgical HCC.[10] This technique involves a needle being introduced into the tumor and slow injection of absolute or 95% ethanol into the lesion. The ethanol induces tumor destruction by drawing water out of the tumor cells and denaturing the structure of the cellular proteins, and so it can achieve a higher rate of complete tumor response for small HCCs.[11,12] The most common side effect of PEI is leakage of ethanol onto the surface of the liver and into the abdominal cavity, causing pain and fever. In the case of our patient, we injected ethanol into the tumor mass via endoscopy to control his GI tract bleeding from direct HCC invasion. The bleeding was successfully controlled without side effects. Endoscopic ethanol injection is very simple to perform and it can be performed during EGD.

As far as we know, this is the first case report that endoscopic ethanol injection successfully controlled GI tract bleeding from direct HCC invasion. In conclusion, endoscopic ethanol injection might be used as an effective and safe therapeutic tool for duodenal bleeding caused by HCC invasion. Yet further studies are necessary to clarify the effectiveness and safety of endoscopic ethanol injection in the setting of invasive HCC.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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