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CASE REPORT | STOMACH

Transcatheter Arterial Radioembolization–Induced Gastric Ulcer in an Excluded Stomach After Roux-en-Y Gastric Bypass

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ABSTRACT

Transcatheter arterial radioembolization (TARE) is a common locoregional treatment for hepatocellular carcinoma. It is associated with peptic ulcer disease in up to 5% of patients. A 70-year-old man with Roux-en-Y gastric bypass and liver cirrhosis with hepatocellular carcinoma treated with TARE 6 months earlier was evaluated for continued melena and was found to have an ulcer in the excluded stomach. This was successfully treated with liquid proton pump inhibitor through gastrostomy tube to the excluded stomach. This represents a unique case of successful management of TARE-induced peptic ulcer disease in the excluded stomach of a Roux-en-Y gastric bypass patient.

KEYWORDS: remnant stomach ulcer; TARE; RYGB; open capsule PPI

INTRODUCTION

Transcatheter arterial radioembolization (TARE) is an increasingly favored locoregional treatment for hepatocellular carcinoma.[1] It is administered through Yttrium-90 glass microspheres that are inserted in the hepatic artery branch that supplies the tumor.[2] Compared with the conventional transcatheter arterial chemoembolization, which have high risk of ischemic necrosis of the liver, TARE causes only minimal injury to the vasculature and the liver parenchyma and subsequently confers lower risk of hepatic ischemia. Nonetheless, radiation injury may occur in adjacent organs, and peptic ulcer disease (PUD) is seen in 1%–5% of patients who have undergone TARE treatments.[3,4] Currently, there is no consensus approach to management of these radiotherapy-induced ulcers. Here, we describe a unique case of a symptomatic TARE-induced gastric ulcer in the excluded stomach after Roux-en-Y gastric bypass (RYGB).

CASE REPORT

A 70-year-old man with a history of RYGB for obesity 10 years earlier, chronic anemia on iron supplement and twice daily proton pump inhibitor (PPI), and hepatitis C with metabolic dysfunction-associated steatohepatitis cirrhosis complicated by hepatocellular carcinoma treated with TARE and liver transplant 6 months earlier was evaluated for melena. Esophagogastroduodenoscopy, colonoscopy, and an antegrade double balloon-assisted enteroscopy found no obvious source. The excluded stomach could not be reached during double balloon-assisted enteroscopy. Because of continued melena and transfusion dependence, the patient underwent a laparoscopic-assisted gastroduodenoscopy to evaluate the excluded stomach. This revealed a 3-cm gastric ulcer in the prepyloric stomach with biopsies showing fibrosis with prominent atypical fibroblasts consistent with radiation-induced ulcer (Figure 1). The pathology showed no evidence of malignancy, viral infection, or *Helicobacter pylori*. Gastrostomy tube (G-tube) access was maintained in the excluded stomach to administer twice-daily liquid PPI through the G-tube (in lieu of the oral PPI he was taking) to promote ulcer healing. Repeat gastroduodenoscopy after 8 weeks of treatment showed a well-healing gastric ulcer (Figure 1). Patient's hemoglobin stabilized, and he had no further transfusion requirement.

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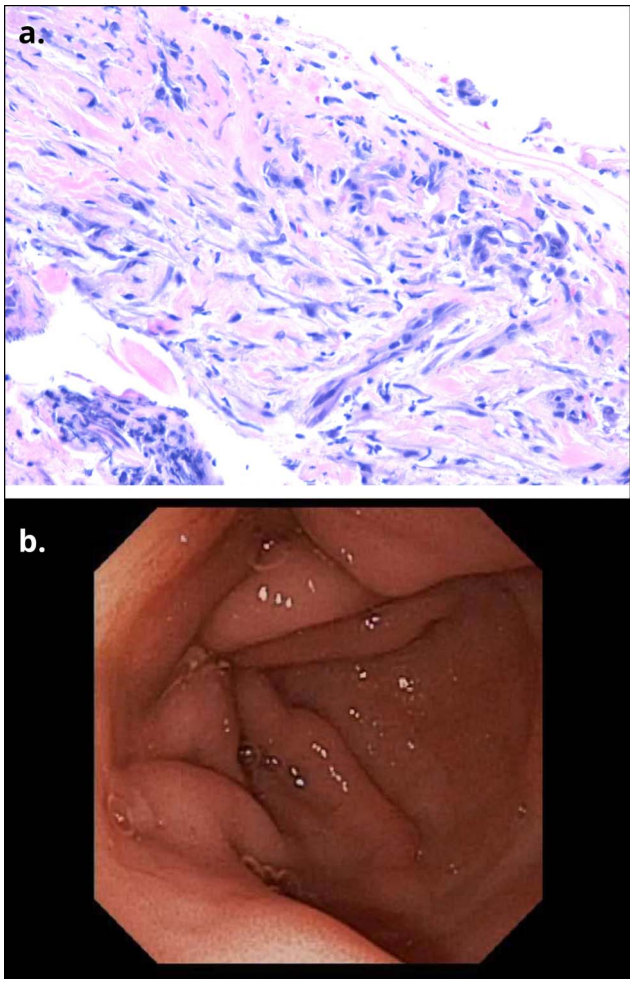

Figure 1. (A) Pathologic examination of the ulcer slough shows fibrosis with prominent atypical fibroblasts consistent with radiation-induced gastric ulcer (hematoxylin and eosin stain, 400×). (B) Repeat gastroduodenoscopy showing healing ulcer (arrow).

DISCUSSION

Gastric ulcers in the excluded stomach after RYGB are rare, especially with increased time after surgery. The prevalence of PUD in the excluded stomach in patients who have undergone RYGB is likely underreported because these are usually only discovered in setting of other complications, such as perforation or bleeding. A recent review evaluating 54 patients with RYGB and PUD noted that 28% of these patients presented with bleeding, with 53% of the bleeding sites in the gastric remnant.[5] Most patients required surgical intervention (ie, Graham patch, gastrectomy, and oversewing), a few were managed through endoscopic intervention, whereas one was managed conservatively.[5] To the best of our knowledge, this is the first reported incident of radiation-induced ulcer in an excluded stomach.

Currently, there is no consensus on management and surveillance of radiation-induced gastric ulcers, and the mainstay is acid suppression through PPI.[4] However, the pathophysiology of radiation-induced ulcers differs from that of the typical PUD, and thus, the response rate of PPI is lower than for other etiologies. In radiation-induced PUD, there is a direct injury to the gastric mucosa causing coagulation necrosis of the chief cells and parietal cells, which causes sloughing of the mucosa and decreased stomach acid, and although some may spontaneously resolve, others have continued ulceration with submucosal fibrosis on pathology, as seen in our patient.[6] Therefore, some patients may need a gastrectomy due to refractory nonhealing PUD after TARE.[4,5]

For treatment in our patient, G-tube access was maintained to the excluded stomach for administration of liquid PPI with excellent ulcer healing and resolution of melena and anemia. This treatment approach was selected based on previous data demonstrating benefit of open capsule PPI to treat marginal ulcers after RYGB.[7] Because the surgical alteration affects gastric emptying, intestinal absorption, and changes in pH, various medications including PPIs have modified pharmacokinetics.[8] This may explain the reason that the patient's oral PPI dosing was not enough to prevent ulcer development. Open capsule PPI administration is believed to enhance healing in marginal ulcers as this bypasses the need for capsular breakdown in the stomach for absorption, but it is unknown whether a similar mechanism is true for an excluded stomach and warrants further studies to better understand its pharmacokinetics. This case highlights a unique case of a TARE-induced gastric ulcer in the RYGB-excluded stomach that was successfully treated with liquid PPI administered through G-tube to the excluded stomach. Direct administration of PPI to the affected area using liquid or open capsule PPI through G-tube should be considered in RYGB patients presenting with PUD in an excluded stomach.

DISCLOSURES

Author contributions: GE Kim: literature review, draft of the manuscript, and manuscript submission; DC: case production and finalization of the manuscript. D. Chen is the article guarantor.

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Informed consent was obtained for this case report.

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