

Gastroduodenal Ulceration Associated with Radioembolization for the Treatment of Liver Malignancies; a Newly Observed Complication Institutional Experience and Review of the Literature

Steven Naymagon¹, Richard R.P. Warner², Kalpesh Patel², Josef Machac³, Joshua L. Weintraub⁴,
Michelle K. Kim²

¹Department of Medicine, Mount Sinai School of Medicine, New York, NY, 10029

²Department of Medicine, Division of Gastroenterology, Mount Sinai School of Medicine, New York, NY, 10029

³Department of Radiology, Division of Nuclear Medicine, Mount Sinai School of Medicine, New York, NY, 10029

⁴Department of Radiology, Division of Interventional Radiology, Mount Sinai School of Medicine, New York, NY, 10029

Background: Microsphere radioembolization is a method of delivering radiation therapy directly to tumors thereby minimizing toxicity to adjacent structures. Despite the relatively high precision of this modality numerous adverse effects have been recognized. One particularly untoward complication is the development of severe gastroduodenal ulceration. Since the utilization of this modality in the treatment of primary and metastatic malignancies of the liver continues to rise, we aim to promote awareness of this complication and to advance the understanding of the pathogenesis, incidence, diagnosis, and treatment of this entity.

Methods: Our institutional experience of gastroduodenal ulceration in patients treated with radioembolization was analyzed and the existing literature on the subject was reviewed.

Results: Five cases from our institution and 16 cases reported in the literature were reviewed. The current evidence suggests that radioembolization-associated gastroduodenal ulceration results from the inadvertent delivery of microspheres to the microvasculature of the gastrointestinal tract leading to direct radiation toxicity. The reported incidence of this entity ranges between 3.1% and 4.6%. Most patients with this complication present with abdominal pain often associated with nausea, vomiting, and anorexia. Symptoms can arise from hours to months after the radioembolization treatment and the diagnosis is made by endoscopic biopsy and histopathologic evaluation of the ulcer specimen. Radiation-induced ulcers have proven to be extremely difficult to treat. Current therapy based on acid suppression has had limited success and the evidence for the addition of antioxidants and anti-inflammatory agents is still sparse. For cases refractory to medical therapy surgical resection may be necessary.

Conclusions: The increasing utilization of radioembolization will inevitably lead to adverse events including gastroduodenal ulceration. This entity must be considered in any patient treated with radioactive microspheres presenting with symptoms of dyspepsia. Accurate diagnosis and aggressive treatment are necessary to improved patient's outcomes.