Successful Diagnosis and Treatment of Radiation Enteropathy with Single Balloon Enteroscopy and Hyperbaric Oxygen: A Case Report

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ABSTRACT

Radiation enteropathy (RE) is a major complication of radiotherapy treatment for patients with abdominal and pelvic malignancies. It can present with obscure GI bleeding in the small intestine that is not always identified by standard upper and lower endoscopy.

Balloon assisted enteroscopy is a valuable tool that can be used in the diagnosis of radiation enteropathy, especially when other advanced methods such as capsule endoscopy are unsuccessful.

This case demonstrates the successful use of balloon assisted enteroscopy in the diagnosis of radiation enteropathy. Additionally, it highlights the utility of hyperbaric oxygen therapy in the treatment of RE.

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INTRODUCTION

Radiation enteropathy (RE) is a major complication of radiotherapy treatment for patients with abdominal and pelvic malignancies.[1] Pathological features include capillary fibrosis and bowel ischemia. RE often presents with obscure GI bleeding, which is defined as bleeding that remains undiagnosed after standard upper and lower endoscopy. Obscure GI bleeding represents 5% of all GI bleeding and is typically found in the small intestine.[1,2] Balloon assisted enteroscopy (BAE) is a valuable tool that permits deep exploration of the small bowel.[3] This case highlights the utility of BAE in diagnosing RE and the role of hyperbaric oxygen therapy in the treatment of RE.

CASE DESCRIPTION

A 78-year-old male with diffuse large B-cell lymphoma, initially presenting as an abdominal mass involving the superior mesenteric artery and small bowel, underwent consolidation radiation of the abdomen. He was later hospitalized for melena and symptomatic anemia requiring multiple blood transfusions. Initial EGD and colonoscopy were largely unrevealing, showing gastritis, small duodenal ulcers, and colonic diverticulosis without evidence of active bleeding. Repeat endoscopic work-up was performed in setting of persistent melena and remained unremarkable.

He then underwent capsule endoscopy with no source of bleeding identified. Ultimately, the decision was made to pursue upper balloon assisted enteroscopy (Single Balloon Enteroscopy, Olympus, Center Valley, PA). Findings from the BAE were consistent with radiation enteritis in the distal duodenum and proximal jejunum. Diffuse oozing was noted within the affected segment of small intestine. Given the diagnosis of RE, the patient was referred for hyperbaric oxygen treatment (HBOT) and had improvement in his anemia and symptoms.

BALLOON ASSISTED ENTEROSCOPY FINDINGS

Single balloon enteroscopy revealed segmental diffuse vascular changes and erythema in the distal duodenum and proximal jejunum, consistent with moderate to severe radiation enteritis. Additionally, multiple angioectasias with clot and oozing were appreciated. Successful Argon Plasma Coagulation (Erbe Med) was performed for obvious bleeding sites. Figure 1 below shows the enteroscopic findings in this case, highlighting the segmental nature of radiation injury in the small bowel.

Figure 1: Small Bowel Radiation Enteritis

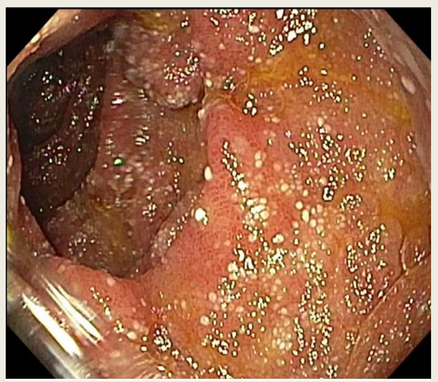

Figure 1a: Beginning of radiation enteritis segment in distal duodenum.

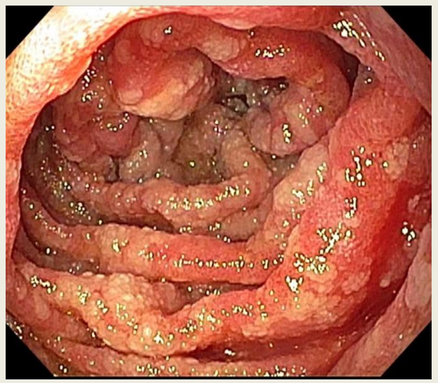

Figure 1b: Radiation enteritis in the proximal jejunum.

OUTCOMES

After the diagnosis of radiation enteritis was made, the patient was referred for hyperbaric oxygen treatment. He underwent a total of 50 sessions and tolerated each treatment well. Upon initiation of treatment, his hemoglobin ranged from 7.0 g/dL to 8.9 g/dL in the first month and ultimately improved to a range of 9.5 g/dL to 11.3 g/dL by the end of his treatment. He had resolution of his melena and overall symptomatic improvement.

DISCUSSION

This case was notable for its successful use of Balloon-Assisted Enteroscopy in the diagnosis and treatment of radiation enteropathy. While capsule endoscopy is often an effective diagnostic test for small intestinal pathology, it is not clear why it didn't show this long segment of radiation enteritis. Furthermore, caution should be used with capsule endoscopy for suspected radiation enteritis as there is a higher risk for capsule retention.

While many small studies have shown positive outcomes for hyperbaric oxygen therapy in treating RE,[4] it is still often underutilized. This case demonstrates the successful use of HBOT to treat radiation enteropathy and should be considered in patients with ongoing symptomatic anemia due to radiation injury given is favorable success rates in controlling bleeding.

CONCLUSIONS

This case highlights the utility of balloon assisted enteroscopy in diagnosing radiation enteritis and the role of hyperbaric oxygen therapy in the treatment of RE. Such awareness could improve the diagnostic timeline of patients who present with similar symptoms after undergoing abdominal radiation.

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