

Endoscopic Therapy of Bleeding from Radiation Enteritis with Hypertonic Glucose Spray

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Abstract

Non-variceal and non-ulcerative bleeding in the gastrointestinal (GI) tract, such as radiation enteritis with active and extensive oozing, is common, and management of these conditions can be challenging. We describe the first case in the literature to use hypertonic glucose spray in radiation enteritis-associated diffuse mucosal bleeding.

Introduction

Non-variceal and non-ulcerative bleeding in the gastrointestinal (GI) tract, such as radiation enteritis with active and extensive oozing, is common, and management of these conditions can be challenging. Conventional treatment modalities, such as endoclips, electric cauterization, argon plasma coagulation (APC), radiofrequency ablation (RFA), and epinephrine injection, may not be feasible or effective. Intralesional injection of hypertonic glucose (50% dextrose) has proven safe and effective in controlling gastric variceal bleeding and peptic ulcer bleeding as a sole modality or an adjuvant therapy.¹⁻³ Therefore, hypertonic glucose might be useful for active GI oozing if sprayed to coat the bleeding surface.

Case Report

We report on an 85-year-old white male transferred to our intensive care unit (ICU) for melena and an acute drop of hemoglobin. He had a history of recurrent stage IV transitional cell carcinoma of the left renal pelvis with metastasis to the lumbar spine and liver, and underwent left nephrectomy in 2005 and partial cystectomy in 2008. Prior to this admission, he had been on chemotherapy with carboplatin and gemcitabine, and had received palliative radiation therapy to the left retroperitoneum with 6,000 cGy in 30 fractions over 42 days. The last radiation treatment of 1,600 cGy had been given 3 months prior. He had a history of pancytopenia resulting from chemotherapy.

He was seen by his oncologist 4 days prior to admission for a 3-day history of melena. Routine labs showed a drop in hemoglobin from baseline of 8.7 g/dL to 3.9 g/dL. He was transfused 5 units of packed red blood cells and 3 units of platelets, and his hemoglobin increased to 8.1 g/dL while platelet counts were stable at 80,000/uL. Esophagogastroduodenoscopy (EGD) showed no active bleeding, and colonoscopy revealed non-bleeding diverticulosis in the sigmoid and descending colon. He continued to have tarry black stools and hemoglobin dropped by 1 g/dL over the next day. A tagged red blood cell scan was negative. Video capsule endoscopy (VCE) revealed active bleeding in the proximal jejunum (Figure 1). An emergent bedside push enteroscopy showed a 10-cm long diseased segment of proximal jejunum with edema, erythema, and friability with fresh adherent blood clots (Figure 2). Based on the clinical history, he was diagnosed with bleeding radiation enteritis.

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Figure 1. VCE revealed active bleeding in the proximal jejunum.

Due to the nature of diffuse mucosal bleeding, no distinct bleeding spots could be identified. Conventional tools such as endoclips, epinephrine injection, APC, and RFA did not seem feasible or efficacious. We decided to perform a spray of 50% hypertonic glucose to the entire segment. The adherent blood clots were washed off prior to hypertonic glucose

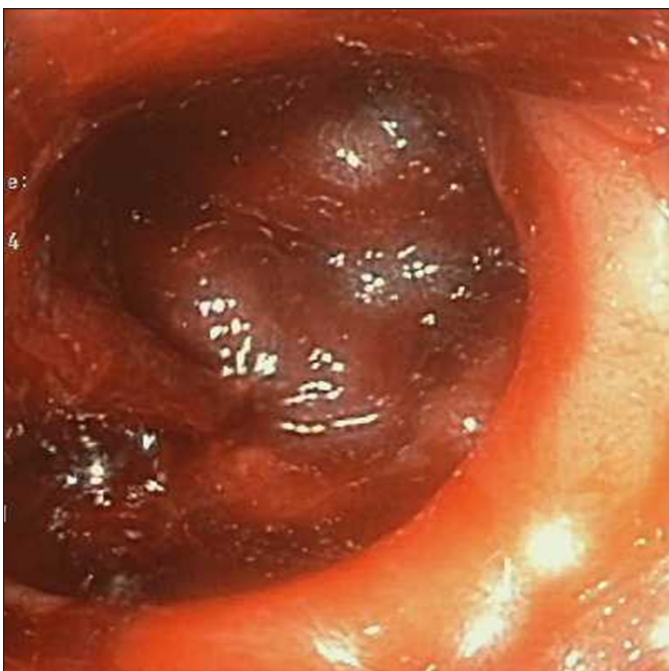


Figure 2. Emergent bedside push enteroscopy revealed severe inflammation, characterized by adherent blood, erythema, congestion, erosions, high friability, and granularity in the proximal jejunum.

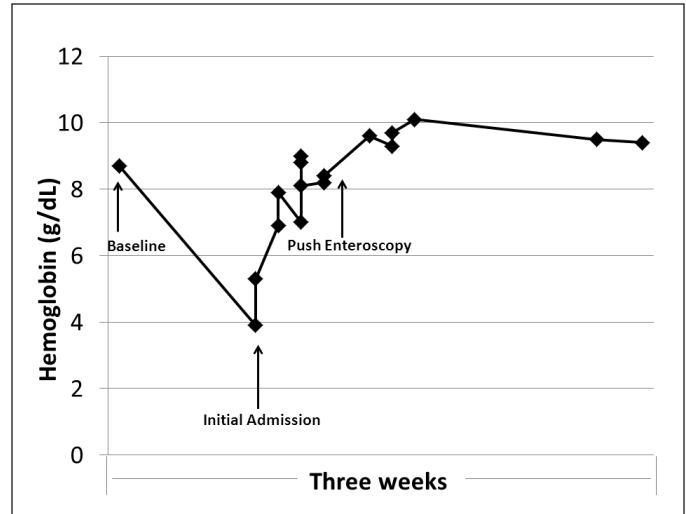


Figure 3. Patient hemoglobin levels during peri-procedure period.

spray. A through-the-scope 7 Fr spray catheter (Cook Medical, Bloomington, IN) was used to spray 260 mL of 50% dextrose, and complete hemostasis was achieved. During close monitoring after push enteroscopy, his bleeding ceased, his hemoglobin remained stable, and he was discharged 2 days after the procedure. His hemoglobin remained stable 2 weeks after discharge (Figure 3). Repeat push enteroscopy 2 months later showed a significant improvement in mucosal inflammation, with only mild erythema and congestion, and no obvious bleeding lesions or blood clots were observed in the proximal jejunum (Figure 4).



Figure 4. Repeat push enteroscopy 2 months after the initial encounter revealed improved inflammation, characterized by mild erythema and congestion, and no bleeding lesions or clots were seen.

Discussion

Intralesional injection of hypertonic glucose has been used for variceal bleeding.^{1,2,4} It is believed to achieve hemostasis via osmotic dehydration, which can induce obliteration of the varices and fibrosis of the paravariceal space, thus leading to intramural thrombosis and external compression of the varices.¹ Compared to other sclerosing agents, hypertonic glucose seems safe, does not cause vascular necrosis, and rarely induces or exacerbates bleeding.^{1,2,4} Although there is some concern about the potential risk of hyperglycemia in diabetic patients, temporary use of hypertonic glucose is unlikely to cause profound and prolonged hyperglycemia. Even if transitional hyperglycemia occurs, it is generally easy to control with insulin.^{1,2,4} As a control measure, glucose was sprayed, rather than injected into mucosal surface, and we immediately suctioned extra glucose after each spray.

We describe the first case in the literature using hypertonic glucose spray in radiation enteritis-associated diffuse mucosal bleeding. The mechanisms by which 50% glucose spray achieves hemostasis in diffuse mucosal oozing warrants further investigation. This opens up a new method to treat extensive and active oozing GI bleeding, which previously has been challenging to control.

Disclosures

Author contributions: C. Tian wrote the manuscript and participated in the case discussion. P. Mehta participated in the case discussion. B. Shen supervised patient care, organized the case discussion, and is the article guarantor.

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Informed consent was obtained for this case report.

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