Bleeding Meckel Diverticulum Associated with a Vitellointestinal Artery Aneurysm Found on Preoperative Angiography: Report of a Case

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Abstract

An 18-year-old man was admitted to a local hospital with abdominal pain and bloody stool. Upper and lower gastrointestinal endoscopy failed to show any bleeding sites; however, an angiography of the superior mesenteric artery done on hospital day 4 showed an abnormal artery with an aneurysm, branching from the ileal artery. This artery was thought to be the vitellointestinal artery, a feeding artery of Meckel diverticulum. After embolization, he was transferred to our hospital, where we performed emergency laparotomy with partial resection of the ileum, including a bleeding Meckel diverticulum. Pathological examination revealed ectopic gastric mucosa and peptic ulceration, which we assumed was the origin of the bleeding. The patient had an uneventful postoperative course. Visceral artery aneurysms are rare but important vascular lesions because of their potential for fatal rupture. Although a minimally invasive procedure can be performed for a vitellointestinal artery aneurysm in patients with asymptomatic Meckel diverticulum, we treated our patient surgically because he presented with hemorrhagic shock and had been unresponsive to an H₂-receptor antagonist.

Key words Meckel diverticulum · Aneurysm · Bleeding

Introduction

Meckel’s diverticulum is an important origin of bleeding in the digestive tract. Visceral artery aneurysms are rare but potentially fatal if they rupture. We report a rare case of bleeding Meckel diverticulum associated with a vitellointestinal artery aneurysm found on a preoperative angiography.

Case Report

An 18-year-old man consulted his general practitioner after suffering abdominal pain for 2 days then passing bloody stools. The bleeding site could not be detected by proctoscopy, so the patient was admitted to a local hospital for suspected hemorrhagic enteritis, after being given an antihistamine 2 receptor antagonist. On admission, his red blood cell count, hematocrit, and hemoglobin were 435 \( \times \) 10⁴/mℓ, 38.9% and 13.4 g/dℓ, respectively. He continued to pass bloody stools, and on hospital day 2, his hemoglobin dropped to 10.0 g/dℓ and he lapsed into unconsciousness as a result of the hemorrhagic shock. An upper gastrointestinal endoscopy and colonoscopy showed no bleeding sites. The next day, his hemoglobin dropped even further, to 6.6 g/dℓ, and a blood transfusion was started. Emergency angiography was done on hospital day 4 when his hemoglobin dropped to 5.7 g/dℓ. Angiography of the superior mesenteric artery showed an abnormal artery branching from the ileal artery (Fig. 1). The abnormal artery was seen to arise from a distal ileal branch of the superior mesenteric artery and did not join with the other ileal branches. An aneurysm was seen in the abnormal artery, but extravasation could not be detected. This artery was thought to be the vitellointestinal artery, the feeding artery of Meckel diverticulum, so embolization was carried out (Fig. 2). The patient was then transferred to our hospital. On admission his red blood cell count, hematocrit, and hemoglobin were 218 \( \times \) 10⁴/mℓ, 18.7%, and 6.6 g/dℓ, respectively. His serum total protein and albumin levels had also decreased, to 4.5 g/dℓ and 2.7 g/dℓ, respectively. His hepatic, renal, and coagulating function test results and electrolytes were within the normal ranges. We performed an emergency laparotomy...
tomy, which revealed Meckel diverticulum on the antimesenteric side of the ileum, about 105 cm oral of the ileocecal valve (Fig. 3a). Intraoperative radiography confirmed that the feeding artery of the Meckel diverticulum was consistent with the embolized artery.

Therefore, we performed partial resection of the ileum containing the diverticulum, followed by reconstruction with an end-to-end anastomosis. Macroscopic examination showed a 34 × 27-mm area of mucosal thickening in the diverticular sac, and 9-mm ulcerations, located 11 mm from the site of mucosal thickening (Fig. 3b). Microscopic examination revealed ectopic gastric mucosa and peptic ulceration of Ul-III (Fig. 4). The patient had an uneventful postoperative course and was discharged on postoperative day 13.

Discussion

Bleeding from Meckel diverticulum is usually associated with ectopic tissue in the diverticular sac. This ectopic tissue is found in 16%–57% of symptomatic patients and is most commonly comprised of gastric mucosa, in 62%–100% of cases.1 More than 80% of bleeding diverticula contain ectopic tissue.1 The most frequent cause of bleeding is thought to be peptic ulceration in the base of the diverticulum at the junction of the ectopic gastric and ileal mucosa.1

Technetium-99m pertechnetate scintigraphy is a test in which a radioisotope is selectively taken up by mucus-secreting cells of the gastric mucosa.2 Although the diagnostic accuracy of scintigraphy is higher than 90% in infants, it decreases to 46% in adults.2–4 Scintigraphic images that demonstrate active gastrointestinal hemor-

Fig. 1. Angiography of the superior mesenteric artery showed an abnormal artery branching from the ileal artery. The abnormal artery was arising from a distal ileal branch of the superior mesenteric artery and did not join with other ileal branches. An aneurysm was seen in the abnormal artery, but extravasation could not be detected.

Fig. 2. The abnormal artery was thought to be the vitellointestinal artery, the feeding artery of Meckel diverticulum, and therapeutic preoperative embolization was done.