INTRODUCTION

An aortoenteric fistula (AEF) is an abnormal communication between a portion of the gastrointestinal (GI) tract and the aorta. It is classified as primary and secondary according to the presence of prior aortic surgery. The prognosis of AEF mainly depends on the time interval between the first clinical manifestations and operative treatment. Therefore early diagnosis is essential for elective surgery since reconstruction in the massive bleeding stage has a mortality of up to 80%. We report a case of AEF diagnosed by double balloon enteroscopy (DBE).

CASE REPORT

A 48-year-old man was admitted to our institution because of three episodes of abrupt hematemesis. Four years ago, he underwent major surgery on the aorta, often an aorta graft operation. We experienced a patient who had undergone graft interposition for abdominal aortic aneurysm and was admitted due to three episodes of hematemesis and following hamatochezia. Gastroscopy, colonoscopy, and radioactive iodine scan failed to identify the bleeding site in the patient. He was diagnosed with AEF by double balloon enteroscopy and recovered after surgical intervention.

Key Words: Aortoenteric fistula; Double-balloon enteroscopy
charged 27 days after surgery. In our case, the DBE was a helpful approach to make correct diagnosis of AEF.

**DISCUSSION**

Nagy and Marshall\(^1\) have defined primary AEF as a communication between the aorta and the GI tract caused by a disease, mainly due to an abdominal aortic aneurysm. In contrast, secondary AEF develop following aortic reconstructive surgery and abdominal bypass procedures.\(^1\)-\(^3\) Secondary AEFs were first described by De Castro et al.\(^4\) in 1956 and successfully reconstructed by Heberer\(^5\) in 1957.

The initial bleeding episodes of secondary AEF can occur on the average between 14 and 52 months after vascular reconstruction.\(^6\)-\(^7\) Mechanisms include direct mechanical erosion of the suture line into the bowel as well as proximal suture line disruption with pseudoaneurysm formation and fistulization. Graft infections from intraoperative contamination, ba-
Aortoenteric Fistula Diagnosed by Double Balloon Enteroscopy

Recent literature on the use of MDCT scans with three-dimensional reconstruction report a high sensitivity. Angiograms are useful for surgical planning, but they are generally not helpful in making the diagnosis of an AEF. In our case, MDCT was also a useful tool for diagnosis of AEF. If MDCT was used as the initial diagnostic tool in our case, AEF could be detected earlier. But AEF is a less frequent cause of obscure GI bleeding, which is why we did not recognize AEF. Although it is not easy to detect AEF by endoscopy, we could diagnose AEF by DBE. After that, we performed MDCT and angiogram to diagnose AEF.

Push enteroscopy (PE) traditionally has been used to examine the proximal part of the small bowel when initial gastroscopy and colonoscopy failed to detect the source of bleeding. Looking at the results, we considered that PE might be useful for the detection of AEF in our case. We couldn't find any blood clot by gastroscopy and colonoscopy despite the history of hematemesis in the patient; however, hematochezia happened again with dropped Hb level. We needed to examine the entire small bowel because obscure GI bleeding may occur anywhere throughout the small bowel. We performed DBE to detect the source of obscure bleeding because antegrade DBE is superior to PE in the length of insertion and DBE can be used via antegrade or retrograde routes.

In conclusion, in our case, AEF was diagnosed in the proximal jejunum by DBE and was treated with surgery immediately.

Conflicts of Interest

The authors have no financial conflicts of interest.

REFERENCES

1. Nagy SW, Marshall JB. Aortoenteric fistulas. Recognizing a potentially catastrophic cause of gastrointestinal bleeding. Postgrad Med 1993;93:211-222.
2. Antinori CH, Andrew CT, Santaspirt JS, et al. The many faces of aortoenteric fistulas. Am Surg 1996;62:344-349.
3. Tareen AH, Schroeder TV. Primary aortoenteric fistula: two new case reports and a review of 44 previously reported cases. Eur J Vasc Endovasc Surg 1996;12:5-10.
4. De Castro J, Martiny PJ, Polk JW. Case report: rupture of aortic aneurysm with recurrent hemorrhage, simulating upper gastrointestinal bleeding. Mo Med 1956;53:1073-1075.
5. Heberer G. Diagnosis & surgical treatment of abdominal aortic aneurysm. Dtsch Med Wochenschr 1957;82:562-569.
6. Wierman WH, Strahan RW, Spencer JR. Small bowel erosion by synthetic aortic grafts. Am J Surg 1966;112:791-797.
7. Busuttil RW, Rees W, Baker JD, Wilson SE. Pathogenesis of aortoduodenal fistula: experimental and clinical correlates. Surgery 1979;85:1-13.
8. Norgren L, Jersby B, Engelbau L. Aortoenteric fistula caused by a ruptured stent graft: a case report. J Endovasc Surg 1998;5:269-272.
9. Janne d’Othée B, Soula P, Otal R, et al. Aortoduodenal fistula after endovascular stent-graft of an abdominal aortic aneurysm. J Vasc Surg 2000;31(1 Pt 1):190-195.
10. Alankar S, Barth MH, Shin DD, Hong JR, Rosenberg WR. Aortoduodenal fistula and associated rupture of abdominal aortic aneurysm after...
endoluminal stent graft repair. J Vasc Surg 2003;37:465-468.

11. Montgomery RS, Wilson SE. The surgical management of aortoenteric fistulas. Surg Clin North Am 1996;76:1147-1157.

12. Peck JJ, Eidemiller LR. Aortoenteric fistulas. Arch Surg 1992;127:1191-1193.

13. Abernethy W, Sekijima JH. Images in clinical medicine. Aortoenteric fistula. N Engl J Med 1997;336:27.

14. Perks FJ, Gillespie I, Patel D. Multidetector computed tomography imaging of aortoenteric fistula. J Comput Assist Tomogr 2004;28:343-347.