Delayed bowel necrosis due to inferior mesenteric artery occlusion in Stanford type A acute aortic dissection

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INTRODUCTION

Organ malperfusion is a life-threatening complication of acute aortic dissection (AAD) [1]. Among such complications, mesenteric ischaemia is relatively rare [2]. Furthermore, bowel necrosis due to inferior mesenteric artery (IMA) occlusion is an extremely rare manifestation [3]. Herein, we report a case of Stanford type A AAD (AAAD) followed by delayed bowel necrosis associated with IMA occlusion.

CASE REPORT

A 55-year-old man diagnosed with AAAD was transferred to our hospital. He was a current smoker with a history of untreated hypertension. Computed tomography angiography (CTA) showed a flap and patent false lumen in the ascending aorta, occluded IMA (diameter 5 mm) and decreased enhancement in the sigmoid colon. Bilateral internal iliac arteries were patent. The coeliac artery (CeA) and superior mesenteric artery (SMA) had a common trunk, and the ostium was dissected; however, the distal branches were well enhanced (Figure 1A–E).

Surgery was performed via median sternotomy under general anaesthesia. After cardiopulmonary bypass was initiated, circulatory arrest was obtained under deep hypothermia. Entry tear was found in the middle of the ascending aorta. Hemiarch replacement using a 24-mm Dacron prosthetic graft (J-graft; Japan Lifeline Co., Ltd., Tokyo, Japan) was successfully performed. The duration from AAAD onset to reperfusion was 5 h. He was successfully extubated on the same day. CTA on postoperative day 4 showed complete remodelling of the false lumen with the patent IMA. Although CTA showed slightly distended sigmoid colon with partially decreased enhancement (Figure 1F), he showed no abdominal symptoms and no abnormality in blood tests. He was discharged on postoperative day 11 without any complications. At the 3-month follow-up, he complained of abdominal distention and constipation and was referred to a gastroenterologist. CT showed an unidentified tumour in the sigmoid colon with distended intestine and proximal bowel (Figure 1H), suggesting an obstructive ileus. Transanal ileus tube was inserted (Figure 1G), and low anterior resection was performed. He was discharged uneventfully. Histology showed ischaemic necrosis of the sigmoid colon, occurring over a relatively long period, without malignant findings (Fig. 2). He has been free from aortic and gastrointestinal events for 1 year after the last surgery.

DISCUSSION

Bowel necrosis is a rare complication in AAAD, with an incidence of 1.8% [2]. Moreover, delayed bowel ischaemia in AAAD is extremely rare. IMA occlusion due to AAD sometimes occurs but is usually not considered an important finding because a collateral pathway between the SMA and IMA supplies blood to the colon. Thus, a single IMA obstruction is usually not critical. However, our patient had a vascular anomaly: SMA originating from the CeA. In addition, the common trunk was dissected and the true lumen of the SMA was stenotic because of the thrombosed false lumen. Furthermore, the left colic artery, comprising a collateral network between the SMA and IMA, was occluded. Thus, we speculated that sigmoid colon ischaemia occurred because the collateral blood supply from the SMA was decreased due to left colic artery occlusion and SMA–CeA common trunk stenosis. Although the patient was asymptomatic, silent ischaemia might have led to ischaemic necrosis of the sigmoid colon after discharge.
Our case can be a word of caution for all cardiac surgeons to be careful of IMA occlusion in AAD, especially in patients with SMA dissection or mesenteric artery anomalies due to potentially decreased collateral flow. Such patients have a risk of delayed colonic ischaemia even when reperfusion has been successfully obtained within a short period after onset.

**Ethical**

This study was approved by the ethics committee of the Nagoya Heart Center (NHC2021-0713-11).

**Conflict of interest:** none declared.

**Data availability**

The data underlying this article are available in the article.

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**Reviewer information**

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