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A primary aortoesophageal fistula due to esophageal carcinoma successfully treated with endoluminal aortic stent grafting

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A primary aortoenteric fistula is described as the communication between the aorta and the intestine without previous aortic surgery. Aortoesophageal fistula is a relatively rare but life-threatening cause of upper gastrointestinal tract bleeding. A thoracic aortic aneurysm is the most common reported cause, and ulceration of a carcinoma is a rarity.¹ Although surgeons agree that the treatment of the primary aortoesophageal fistula should be surgical, the mortality is very high. Herein, we report a primary aortoesophageal fistula due to esophageal carcinoma successfully treated by using endoluminal aortic stent grafting.

Clinical Summary

A 64-year-old man was admitted to our department with persistent midthoracic pain, severe dysphagia, and a weight loss of 8 kg during the previous 3 months. An upper gastrointestinal endoscopic study revealed a friable tumor 5 cm in length in the middle thoracic esophagus. The esophageal tumor was diagnosed as a moderately differentiated squamous cell carcinoma by endoscopic biopsy samples. A computed tomographic scan revealed that the tumor invaded into the descending aorta. Therefore, the patient was treated with combination cis-dichlorodiammineplatinum and

Figure 1. A computed tomographic scan revealed that the tumor invaded into the descending aorta and had a communication between the aorta and the esophagus.

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fluorouracil adjuvant chemotherapy. The chemotherapy regimen consisted of 70 mg of cis-dichlorodiammineplatinum on day 1 and 750 mg of fluorouracil on days 1 to 5, intravenously. Seven days after the chemotherapy, the patient experienced hemorrhagic shock with massive upper intestinal bleeding. After crystalloid transfusion, the patient recovered from the hemorrhagic shock. A computed tomographic scan and aortography were performed. Both tests showed a communication between the aorta 10 cm distal to the ostium of the left subclavian artery and the esophagus in its middle segment (Figure 1). To control massive upper intestinal bleeding, a stent graft made from a Gianturco Z-stent (William

Figure 2. A, Aortography showed a communication between the aorta 10 cm distal to the ostium of the left subclavian artery and the esophagus in its middle segment. B, A stent graft made from a Gianturco Z-stent covered with a Dacron graft controlled massive esophageal bleeding.

Cook Europe A/S, Bjaeverskov, Denmark) covered with a Dacron (DuPont, Wilmington, Del) graft was implanted (Figure 2). After 2 weeks, the patient underwent bypass surgery by using the right colon replacement. The right colon was mobilized and then pulled through the cervical incision via the subcutaneous route. The cervical esophagus was cut with the linear stapler. The anastomosis between the proximal cervical esophagus and the ascending colon and the transverse colon and the stomach was performed in an end-to-side fashion. Subsequently, an end-to-end ileocolostomy was created. The patient's postoperative recovery was uneventful. At 6 months, he is enjoying a normal life and has been able to return to work.

Comment

Primary aorto-esophageal fistula is a rare clinical entity, with an incidence in a necropsy series² of 0.04% to 0.07%. In 1991, Hollander and Quick¹ published a comprehensive review that included 500 cases of aorto-esophageal fistula gathered from the literature. The main etiologic factor involved aortic disease; 54.2% of cases were secondary to rupture of an aneurysm of the descending thoracic aorta into the esophagus. The next most frequent causes were foreign body (19.2%) and advanced esophageal carcinoma (17.0%).

Many surgeons now agree that the treatment of the primary aorto-esophageal fistula should be surgical, because patients treated conservatively have a high mortality. In 1969, Yonago and colleagues³ reported the first survivor of an aorto-esophageal fistula. Since then, long-term survival has been obtained in patients with aorto-esophageal fistulas secondary to foreign bodies, peptic ulceration, reflux esophagitis, thoracic aortic aneurysms, and posttraumatic inflammation. In 2000, Cairois and associates⁴ described a case of aortic perforation secondary to an esophageal carcinoma that was treated with initial success. Unfortunately, the patient died within a year of operation as a result of liver metastases. Because advanced esophageal carcinoma lesions are usually widespread and often have

distant metastases, cases that have invaded into the aorta are deemed to be unresectable carcinomas when an aorto-esophageal fistula has not occurred. Therefore, the best treatment of the primary aorto-esophageal fistula due to esophageal carcinoma is unresolved.

Since Parodi and associates⁵ first reported the use of an endoluminal stent graft for repair of abdominal aortic aneurysms, use of the endoluminal stent graft procedure has expanded rapidly. We use this technique for the control of massive upper intestinal bleeding of an aorto-esophageal fistula due to advanced esophageal carcinoma. The theoretical advantages of endovascular treatment of an aorto-esophageal fistula are multiple. A simple arteriotomy is performed without thoracotomy or aortic clamping. The risk of medullar ischemia is theoretically less than that with conventional surgical intervention, possibly because of the absence of aortic clamping and the location of the aortic injury. Moreover, there is no need for intraoperative single-lung ventilation. Because stent graft insertion can be performed with mild anticoagulation, the major bleeding complications observed with heparinization can theoretically be avoided. Our experience demonstrates the effectiveness of endovascular graft placement and esophageal bypass reconstruction. This technique will find a role in the treatment of aorto-esophageal fistula due to esophageal carcinoma.

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