CASE REPORT

A 63-year old male patient was admitted to the Department with diagnosis of esophagogastrectomy due to cancer, as well as analysis of available literature data.


The aim of the study was to present a case of an aortoesophageal fistula following esophagogastrectomy, due to cancer, as well as analysis of available literature data.
Aortoesophageal fistula – rare complication after esophagogastrectomy, due to cancer

During the postoperative period the patient was subject to parenteral nutrition by means of central venous access and nutritional jejunostomy. In the seventh postoperative day the tightness of the esophagogastrointestinal anastomosis was confirmed radiologically, and oral nutrition introduced. The postoperative course was complicated by the presence of an abscess at the site of the removed spleen with serous fluid accumulation in the left pleural cavity. The patient once again required the introduction of a drain into the left pleural cavity. Fourteen days after the operation a percutaneous drain was introduced into the cavity of the abscess, under ultrasound control. Based on the obtained cultures from the abscess, targeted antibiotic treatment was commenced. After pleural cavity drainage and drain removal, oral nutrition was initiated.

In the 28-th postoperative day the patients’ condition deteriorated, tarry stools and hematemesis were observed. Endoscopy of the upper gastrointestinal tract confirmed the presence of fresh blood in the esophagus and small bowel. Bleeding at the site of the esophagogastrointestinal anastomosis was confirmed. Bleeding was controlled by means of vascular clipping. Due to hypovolemic shock the patient was transferred to the ICU. Fluid resuscitation was initiated. After initial improvement and stabilization of circulatory system parameters, the patients’ condition once again deteriorated (3 hours). The endoscopic intervention confirmed re-bleeding from the esophago-intestinal anastomosis. Hemorrhagic control was initiated. During these procedures the patient went into cardiac arrest, and died, despite resuscitation.

Autopsy confirmed the presence of an aortoesophageal fistula, 3 mm in diameter, in the direct vicinity of the metallic stapler. The esophago-intestinal anastomosis was properly healed without inflammatory changes.

DISCUSSION

Secondary aorto-esophageal fistulas result from prior surgical treatment. It is estimated that there are 5% of the above-mentioned, considering all aorto-esophageal fistulas. Early fistula development is usually preceded by anastomotic leakage between the esophagus and reconstructive organ, or technical error. Most fistulas developed in the distant postoperative period, considering patients in good general condition. The following possible causes of fistula development were presented: anastomotic leakage, esophageal, gastric, and intestinal ulcers, as well as technical error.

Before the era of anastomoses with the use of staplers the authors described a fistula associated with the erroneous implementation of a suture at the site of the aortic wall anastomosis (1). In a series of 8 aortoesophageal fistulas described by La Roux, considering patients operated by means of Ivor-Lewis’s method, the incidence of the above-mentioned complication amounted to 1 per 52 operations. In 7 cases the fistula developed at the site of the esophagogastrointestinal anastomosis: visible post-inflammatory lesions (abscess cavity) during autopsy in two patients and fibrosis in two. In three cases, the anastomosis adhered directly to the aorta. All hemorrhage episodes resulted in patient death (2). Maillard et al. presented 4 patients with fistulas after esophageal resection operations from the left thoraco-laparotomic approach, and 3 proved fatal. All fistulas were located in the vicinity of the anastomosis (3). Lookman et al. described three cases of postoperative aortoesophageal fistulas located in the vicinity of the esophageal anastomosis, all proved fatal (4). Molina-Navarro et al. described a patient with a fistula at the site of the ulceration located on the posterior wall of the gastric stump. The patient died, due to hemorrhage, in the 21-st postoperative day.

Sato et al. described a patient after lower esophageal resection complicated by esophagogastrectomy leakage. The patient was reoperated and diagnosed with an esophago-gastric anastomosis fistula. The successful procedure was performed 46 days after the initial operation (4). Okita et al. presented a patient after gastrectomy and lower esophageal resection with bleeding from the aortoesophageal fistula at the site of esophagogastrectomy. The patient was successfully reoperated in the 24-th postoperative day (6).

Clinical symptoms

The described syndrome (1914), named Chiari’s triad consists of dysphagia, chest pain
with spontaneous bleeding, preceding massive hemorrhage (7). The full range of symptoms is observed in 45% of patients. In the remaining patients the incidence and intensity of symptoms can vary. The dynamism and duration of symptoms is also diversified. The interval between the first episode of bleeding and massive hemorrhage may vary from two hours to several days. Most patients after upper gastrointestinal pathology surgery complicated by aortoesophageal fistula development, die during the course of hemorrhagic shock. In approximately 60% of cases aortoesophageal fistulas occurred between the 9-th and 21-st day after surgery, and in 82% between the 2-nd and 6-th week (8).

Diagnostics

Symptoms of bleeding from the upper gastrointestinal tract in a patient after surgery necessitate the consideration of endoscopy in first place. The benefits of endoscopy include the possibility to view the site of bleeding, and the quantitative and qualitative evaluation of the above-mentioned. During the endoscopic procedure it is possible to definitely control the bleeding episode. Even if the amount of blood in the lumen of the gastrointestinal tract prevents full diagnostics, endoscopy provides information concerning massive hemorrhage, and may prove decisive considering surgical intervention.

Computer tomography can be a valuable addition to the endoscopic examination showing the presence of contrast in the lumen of the gastrointestinal tract. Both CT and MRI of the chest in case of a hemodynamically unstable patients might be difficult to perform, and therefore, carry some risk. Angiography with aortography and possibility of hemorrhage embolization seem to be most useful, considering all radiological examinations.

Treatment

Aortoesophageal treatment results are poor. The presented short series of patients in literature data (<8 patients), as well as small number of publications concerning the problem, are evidence of the lack of experience in the diagnostics and treatment of the above-mentioned, and low incidence. Most patients are diagnosed with aortoesophageal fistulas during oligovolemic shock. Treatment is aimed at the stabilization of the patients’ condition, preventing from emergency reoperations.

The previously described possibilities of endoscopy are not only associated with diagnostics, but also with hemorrhagic control. A good effect was obtained after the introduction of an esophageal graft (9), and vascular clips. The use of a Sengstaken-Blakemore tube is less effective (10). Efforts have been undertaken to close the fistula from the side of the aorta. Embolization of the fistula during angiography can be an effective method of hemorrhage control (11).

In the report concerning the aortoesophageal fistula, which developed in a patient with an unresectable esophageal cancer after stent implantation, emergency embolization with cyanoacrylate and endovascular stent graft implantation proved to be an effective method to control bleeding in case of palliative patients (12, 13).

Despite the encouraging results of minimally invasive treatment, surgery remains the only chance of survival. However, most patients die before surgical intervention. Due to the good exposure of the aorta, the left thoracotomy approach is recommended (Le Roux). Surgery consists in locating the source of bleeding, controlling it, aorta preparation, and closure of the vascular lesion by means of interrupted sutures. Due to the potential contamination of the operative field, one should try to avoid using prosthetic material when suturing the aorta, with the exclusion when interrupted sutures proved ineffective. The continuity of the gastrointestinal tract is reconstructed during the following stage of surgery. Patients described by Okita and Sato developed false aortic aneurysms and required endovascular graft implantation. The amount of transfused blood, reached several liters.

CONCLUSION

The risk of death in case of a patient subject to surgical treatment, due to esophageal carcinoma, complicated by aortoesophageal fistula development, is high. Amongst the most frequently mentioned reasons, which may lead to fistula development, is esophageal anasto-
miosis leakage. Although aortoesophageal fistula presence is a rare consequence of anastomotic leakage, it remains the most dangerous and immediate threat to the patients’ life.

The incidence of esophagogastric and esophagointestinal anastomoses leakage cases is estimated at 3 to 25%. The influence on the occurrence of leakage might be attributed to the following: vascularization of anastomosis margins, lack of serous membrane, and features of the esophageal wall. Errors in the surgical technique can lead to organ ischemia, anastomotic tension, and infections. Concomitant diseases, such as diabetes mellitus and heart failure might have influence on the healing process.

Therefore, efforts should be undertaken to reduce the rate of anastomotic leakage cases. The use of staplers significantly reduced the number of anastomotic leakage and associated complications (14). Amongst other methods, one should mention pedunculated mesh implantation, pleural tenting (15), and anastomotic channelization.

In conclusion, if a patient after esophageal surgery develops hematemesis with coexisting circulatory system decompensation, one should consider the possibility of an aortic fistula. Simultaneous diagnostics and resuscitation should answer the question whether there are indications for emergency surgical intervention. In the need of surgery, treatment should be initiated when the patient is hemodynamically stable.

Finally, it is worth recalling the Polish achievements in the treatment of aortoesophageal fistulas. The first closure of the post-traumatic aortoesophageal fistula (the patient survived) was described by Taniewski et al. in the „Polish Otolaryngology“-1961.

REFERENCES


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