SPONTANEOUS RUPTURE OF THE ESOPHAGUS, POSTERIOR PURULENT MEDIASTINITIS, LEFT-SIDED PLEURAL EMPYEMA IN COMBINATION WITH TWO PERFORATED DUODENAL ULCERS, DIFFUSE BILE PERITONITIS, AND RETROPERITONEAL PHLEGMON

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ABSTRACT According to most researchers, spontaneous rupture of the esophagus (SRE) occurs relatively rarely, ranging from 1.7% to 17.5% of all cases of damage to the esophagus. Today, there is no one categorical opinion on the effectiveness of various treatments for SRE among surgeons, there are no uniform algorithms for diagnosis and evaluation of the treatment. SRE is a real threat to the life of a patient: SRE mortality rate is up to 75% in the prehospital period and up to 25%-85% in the postoperative period, and depends on the time interval between the rupture of the esophageal wall and the surgery, as well as complications.

Keywords: spontaneous esophageal rupture, perforated duodenal ulcer, peritonitis.

INTRODUCTION

The first publication of spontaneous rupture of the esophagus was issued in 1724 *(Herman Boerhave).* At that time, such observations were considered casuistic. Currently, spontaneous rupture accounts for 15-17% in the structure of esophageal perforations [1-3]. Spontaneous rupture of the esophagus is accompanied by infectious necrotic complications in 70-90% of cases, high mortality, reaching 86% and has no tendency to decrease in the last decade [4-6]. Late diagnosis and complexity of surgical treatment which requires multi-stage operations as a rule, as well as multiple organ failure become the main factors determining the high rate of mortality [7-11]. Despite the widespread use of modern methods of instrumental diagnostics, early detection of the disease remains an unsolved issue [1, 2, 8, 12, 13]. Views on the types and sequence of interventions in patients with spontaneous rupture of the esophagus are contradictory [2, 9, 11].

We report the case of successful surgical treatment in a patient with spontaneous esophageal rupture, mediastinitis, left-sided pleural empyema in combination with two perforated duodenal ulcers (DU), diffuse bile peritonitis and retroperitoneal phlegmon. We have not found such observations in the literature.

A 56-year-old male patient M. was transferred to the Sklifosovsky Research Institute on 13.03.2014 from the State Clinical Hospital № 68 of Moscow. History: the patient had been suffering of duodenal ulcer for 10 years and had not been examined and treated for the last 5 years. On 11.03.2014, he noted nausea after dinner, vomiting repeated with a mixture of fresh blood, then there was a strong pain in the epigastrium, retrosternal pain and shortness of breath. In an hour after the onset of the disease, an ambulance crew delivered the patient to SCH № 68 in Moscow with a diagnosis of "acute pancreatitis". Chest X-ray revealed a left-sided hydrothorax. Drainage of the left pleural cavity was performed. We evacuated 500 ml of brown liquid with admixture of food. On 12.03.2014, esophagogastroduodenoscopy revealed a defect in the left lower thoracic esophageal wall of 1.5x0.5 cm. The patient was transferred to the Sklifosovsky Research Institute for Emergency Medicine with the diagnosis of “spontaneous rupture of the esophagus”.

Upon admission, the patient's condition was serious. Skin and visible mucous membranes had pale color. The patient was conscious and adequate. Complaints of pain in the left side of the chest, epigastrium, shortness of breath. Unimpaired breathing, weakened in the left basal parts, no rales. The frequency of respiratory movements – 26-28 breaths per min. Heart sounds were muffled and rhythmic. Blood pressure – 130/80 mm Hg. Heart rate – 110 beats per min. The abdomen was soft, painful in the epigastric region. No symptoms of peritoneal irritation. No dysuria. Locally: subcutaneous emphysema of the chest on the left. There were 5 mm-diameter single lumen drainage tubes with the cloudy discharge in the 2nd intercostal space on the midclavicular line on the left and in the 7th intercostal space on the posterior axillary line to the left.

Chest X-ray: left-sided hydropneumothorax. Hypoventilation of basal segments of both lungs (Fig. 1a).

X-ray contrast study of the esophagus with barium sulfate tracer: leaking of contrast agent off the contours of the esophagus on the left side at the level of Th_{IX}-Th_{X} entering into the left pleural cavity (Fig. 1b).

Ultrasound examination of the pleural cavity, pericardium, and abdomen: bilateral hydrothorax with separation of pleural layers of 1.5 cm. Separation of pericardial layers of 0.5 cm, not thickened pericardium. Free fluid in the abdominal cavity of the peritoneum with separation of leaflets of 1.0 cm in the subhepatic space, right lateral canal, and pelvis.

On 13.03.2014 at 4:45 p.m., superior median laparotomy was performed under endotracheal anesthesia. We found about 1000 ml of bile in the abdomen, mostly on the right. The bile was taken for culture test. At operative exploration, two perforated penetrating stenosing duodenal ulcers of about 2.0 cm in the diameter were identified on the anterior and posterior wall with an infiltrate around and the inflow of bile. The cellular tissue was impregnated with bile and had areas of necrosis along the ascending colon (Fig. 2). The liver had normal size and was not hardened. The bladder was enlarged in volume, had thickened wall and stagnant bile in the lumen (puncture of the gallbladder was not performed). Loops of small intestine were enlarged, had edematous walls with loose fibrinous deposits. The colon was inflated. After sanitation of the abdominal cavity, antrectomy with Roux-en-Y gastroenteroanastomosis was performed. The left lobe of the liver was mobilized. Sagittal diafragmotomy was performed. In the posterior mediastinum, we opened the cavity communicating with the left pleural cavity having about 100 ml contents (pus with an admixture of barium suspension; taken for culture test). Significant necrotic tissue changes of mediastinum spread up to the level of Th_{VII}. The cavity in the posterior mediastinum and the left pleural cavity were thoroughly rinsed with chlorhexidine. Mobilization of the lower third of the esophagus and gastric fundus was performed. Esophageal defect was determined at a height of 2 cm from the cardia along the left wall, of 5.0 cm length. Suturing of the esophageal defect with

double-layer sutures (continuous + interrupted vicryl sutures). Nissen fundoplication was performed at 360º with covering sutures line on the esophagus with the fundus of stomach. Kader gastrostomy was performed on the anterior wall of the stomach in the middle third of the body. Cholecystostomy was performed. Transhiatal drainage of mediastinum with the two-channeled silicone tube №24 to the left of the esophagus was performed, the drains were also installed at the esophageal hiatus. Drains were also installed into the subphrenic space, the left subdiaphragmatic space, right lateral canal and the small pelvis. Jejunal intubation via gastrostomy was performed.

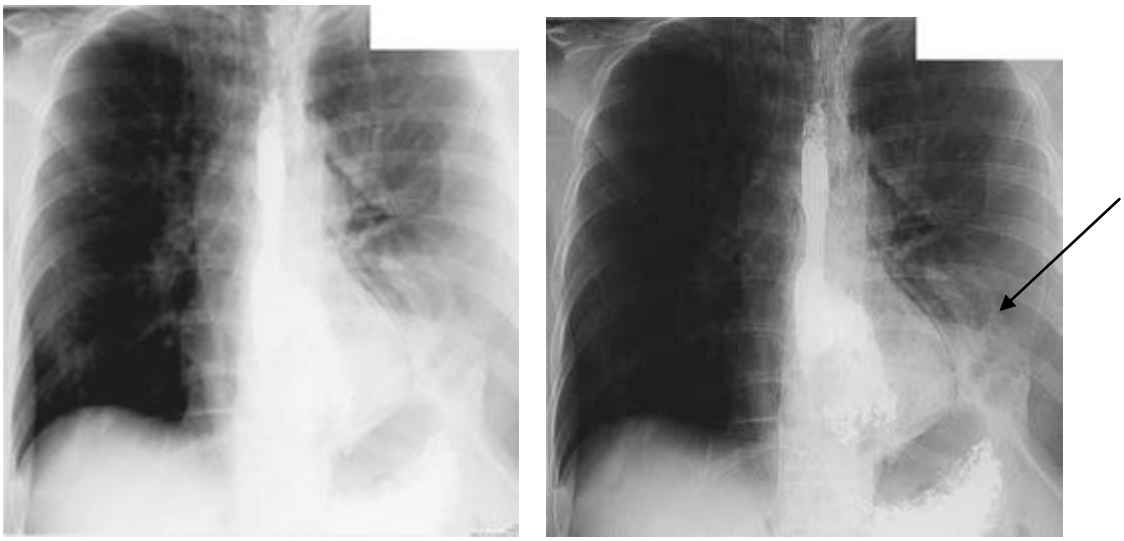

Fig. 1. X-ray scan of the chest, X-ray contrast study of the esophagus. The arrow indicates the rupture of the left wall of the esophagus with the tracer leakage.

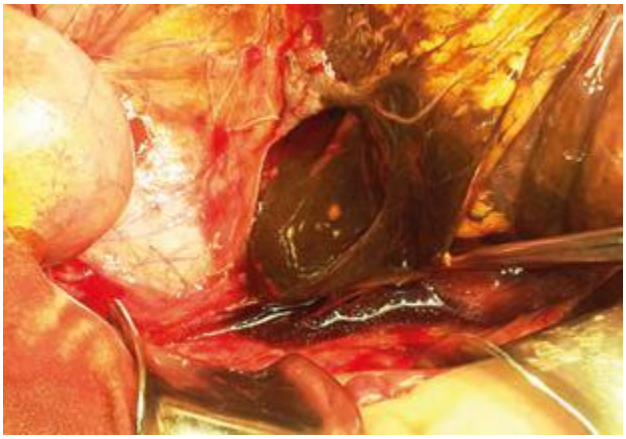

Fig. 2. Retroperitoneal phlegmon

The culture tests of mediastinum and pleural empyema cavity showed growth of *Pseudomonas aeruginosa, Escherichia coli* and *Candida albicans.*

After surgery, the patient received a comprehensive intensive care: infusion-transfusion therapy, antibacterial therapy (Tienam 1 g x 2 times daily i.v., Metronidazole 100,0 2 times per daily i.v. for 10 days), immunocorrective therapy (immunoglobulin 75 mg x 2 times daily i.v., T-activin 1,0 daily s.c., hyperimmune plasma, probiotics), antifungal therapy (Diflucan 50 ml daily), antacid therapy (Aciloc 100 mg x 2 times daily / 14 days), extracorporeal detoxification (plasmapheresis and CVVHDF given as a single dose), tracheobronchoscopic sanitation, persistent lavage of empyema cavity and the cavity in the posterior mediastinum with aspiration, feeding through gastrojejunal probe.

On the 7th day after surgery drains were removed from the abdominal cavity.

On 17.03.14 lower tracheostomy was performed in order to conduct adequate ventilation and tracheobronchial sanitation. The patient's condition stabilized. On 26.03.2014, the patient was allowed to breath independently. Tracheal decannulation was performed. The stitches were removed from the laparotomic wound – primary healing.

X-ray contrast study of the esophagus on the 20th day after surgery: freely passable esophagus, no tracer leakage off the contours of the esophagus, no gastroesophageal reflux (Fig. 3). Gastrojejunal probe was removed. Feeding through gastrostomy was initiated. On the 30th day after surgery we started oral feeding with liquid food.

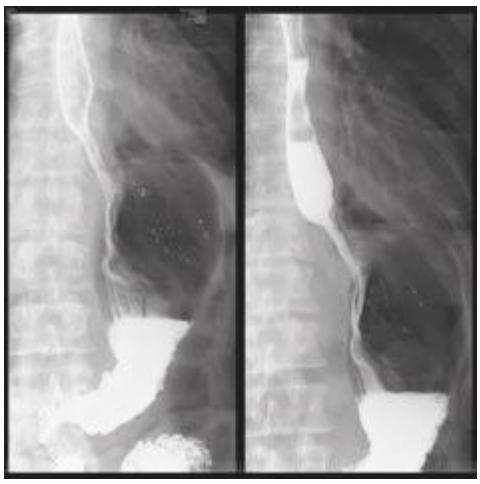

Fig. 3. X-ray contrast study of the esophagus and stomach on the 20th day after surgery

Empyema cavity and the cavity in the posterior mediastinum cleansed and gradually obliterated. Drains were removed on the 40th day after surgery. On the 50th day, the patient was discharged in satisfactory condition.

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REFERENCES

1. Demchenko P.S., Posudevsky S.S., Naumenko V.N. Diagnostika i lecheniye spontannykh razryvov pishchevoda [Diagnosis and treatment of spontaneous ruptures of the esophagus]. *Klinicheskaya khirurgiya*. 1989; 10: 44–45. (In Russian)
2. Pogodina A.N. Spontannyje i gidravlicheskiye razryvy pishchevoda [Spontaneous esophageal and hydraulic fracturing]. *Nauchno*-meditsinskiy vestnik Tsentral'nogo Chernozem'ya. 2007; 29: 59–62. (In Russian)
3. Passos Filho O., Cangussu H.C., Lopes R.H., et al. Boerhaave's syndrome: case report. *Rev. Col. Bras. Cir*. 2013; 40 (1): 83–84.
4. Abakumov M.M., Pogodina A.N. Neotlozhnaya khirurgiya pishchevoda [Emergency surgery of the esophagus]. *Khirurgiya*. 1992; 4: 3–8. (In Russian)
5. Pogodina A.N., Abakumov M.M. Mekhanicheskiye pronikayushchiye povrezhdeniya pishchevoda []. *Khirurgiya*. 1998; 10: 20–24.(In Russian)
6. Lucendo A.J., Friginal-Ruiz B.R., Rodriques B. Boerhaave's syndrome as the primary manifestation of adult eosinophilic esophagitis. Two case reports and a review of the literature. *Dis. Esophagus*. 2011; 24 (2): E11–15.
7. Abakumov M.M. Gnoynyy mediastinit [Purulent mediastinitis]. Khirurgiya. 2004; 5: 82–85. (In Russian)
8. Zavgorodnev S.V., Korniyenko V.I., Pashkov V.G., et al. Spontannyy razryv grudnogo otdela pishchevoda, oslozhnennyy gnoynym mediastinitom, dvustoronnim gidropnevmotoraksom, empiemoy plevry i bronkhial'nym svishchom [Spontaneous rupture of the thoracic esophagus complicated by purulent mediastinitis,bilateral hydropneumothorax,pleural empyema and bronchial fistula]. *Khirurgiya*. 2007; 4: 54–56. (In Russian)
9. Komarov B.D., Kanshin N.N., Abakumov M.M. *Povrezhdeniya pishchevoda* [Damage to the esophagus]. Moscow: Meditsina Publ., 1981.176 p. (In Russian)
10. Emmanouilidis N., Jager M.D., Winkler M., Klempnauer J. Boerhaave syndrome as a complication of colonoscopy preparation: a case repot. *J Med Case Rep*. 2011; 5: 544.
11. Lin W.C., Chen J.D., Tiu C.M., et al. Boerhaave syndrome with atypical clinical presentations diagnosed by computed tomography. *Zhonghua Yi XueZaZhi (Taipei)*. 2002; 65 (1): 45–48.
12. Pogodina A.N. *Klinika, diagnostika i lecheniye povrezhdeniy pishchevoda i ikh posledstviy : dis. ... d-ra med. nauk* [The clinical picture, diagnosis and treatment of lesions of the esophagus and their consequences. Dr. med. sci. diss.] Moscow, 1989. 439 p. (In Russian)
13. Eroglu A., Kurkcuoglu C., Karaoglanoglu N., et al. Spontaneous esophageal rupture following severe vomiting en pregnancy. *Dis. Esophagus*. 2002; 15 (3): 242–243.