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Successful primary staple-repair of thoracic oesophagus after delayed presentation of a spontaneous perforation

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ABSTRACT

INTRODUCTION: Spontaneous perforation of the oesophagus is diagnosed late in over 50% of cases. Misdiagnosis may be due to atypical presentations. Primary repair is technically demanding in this setting and the risk of failure is high.
PRESENTATION OF CASE: An 85 year-old lady presented with an atypical cohort of mild nonspecific symptoms in spite of a pleuro-mediastinal purulent collection secondary to an undiagnosed spontaneous perforation of the oesophagus occurred seven days before. Despite the extent of perforation (3 cm in length), the late diagnosis and the necrosis of the muscular wall, the oesophagus was successfully repaired by means of a stapler.
DISCUSSION: The mechanism of the atypical presentation is discussed and possible modalities of treatment of delayed oesophageal perforations are reviewed, with particular reference to primary repair and to the possible use of staplers within this setting.
CONCLUSION: Even large spontaneous perforations of the oesophagus can result in a contained abscess, with no frank sepsis. Diagnosis can be missed for days in these cases. The attempt at primary repair of the oesophagus is still indicated. The use of a stapler is preferable in such cases as a perfect mucosal approximation is provided with minimal manipulation and with the use of inert, well tolerated material, which does not tend to become infected.

1. Introduction

Spontaneous perforations of the thoracic oesophagus are diagnosed late in over 50% of cases [1–4]. Different modalities of treatment have been reported [2–4]. The attempt at primary repairing regardless of the interval between the injury and the operation is currently advised [1–4]. However, such procedure may be technically demanding and it is at risk of failure in case of very late diagnosis [1,5]. We report the case of a spontaneous perforation diagnosed seven days after an episode of vomiting. In spite of a large perforation with pleural empyema, purulent mediastinitis and extended necrosis of the muscular wall of the oesophagus, a successful repair was achieved by means of the mechanical suture of the oesophageal mucosa.

2. Presentation of case

A 85 year old lady was observed as she was suffering from a seven days lasting discomfort with moderate fever. As her clinical conditions progressively deteriorated, she had been referred to the emergency department of another hospital. A CT scan showed a lower para-oesophageal pleuro-mediastinal collection filled with fluid and air. As the wall of the oesophagus was thickened, the patient was diagnosed with perforated oesophageal cancer. She was then advised with no treatment except for palliation of symptoms. The patient was then referred to the emergency department of our hospital by the family. On admission, she was conscious, normal breathing and moderately febrile. Blood pressure and heart rate were normal. The white blood cell count and C-reactive protein were 11.100 cells/μL and 243 mg/L, respectively. Biochemical signs of liver and renal impairment were minimal. Accurate anamnesis revealed an episode of vomiting occurred seven days before. Since then, the patient had fever and malaise, but she continued to feed orally. CT scan showed the oral contrast to spread into a para-oesophageal mediastinal and left pleural collection (Figs. 1 and 2). A left thoracotomy was performed. A smelly purulent collection was wide opened and debrided. The lower lobe of the lung appeared to be trapped. Necrotic tissues were removed. The distal third of the oesophagus was isolated down to the hiatus. A perforation of

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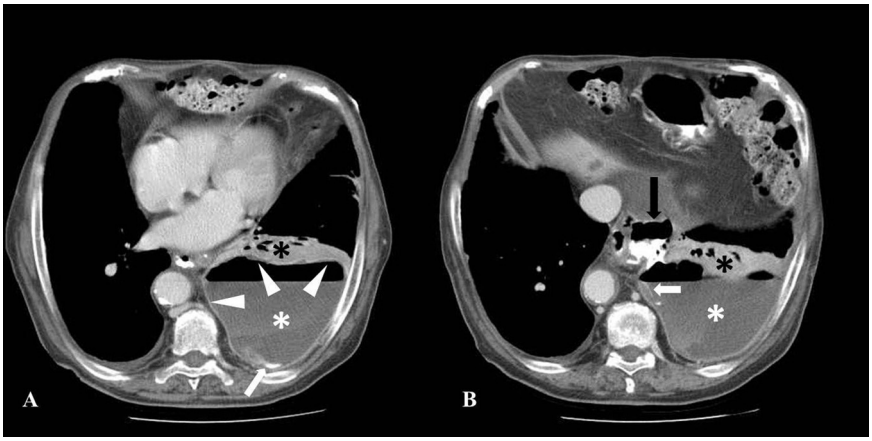

Fig. 1. CT scan performed on admission. Water soluble contrast has been administered by mouth. (a) A left large loculated pleural effusion filled with purulent fluid and air is evident (white asterisk). The wall of such collection in thickened and hyperaemic (arrowheads). The black asterisk shows the atelectatic lower lobe of the lung. (a), (b) A small amount of contrast leaks from the mediastinum into the pleural collection (white arrows). (b) A large amount of contrast mixed with air is filling a para- oesophageal mediastinal collection (black arrow).

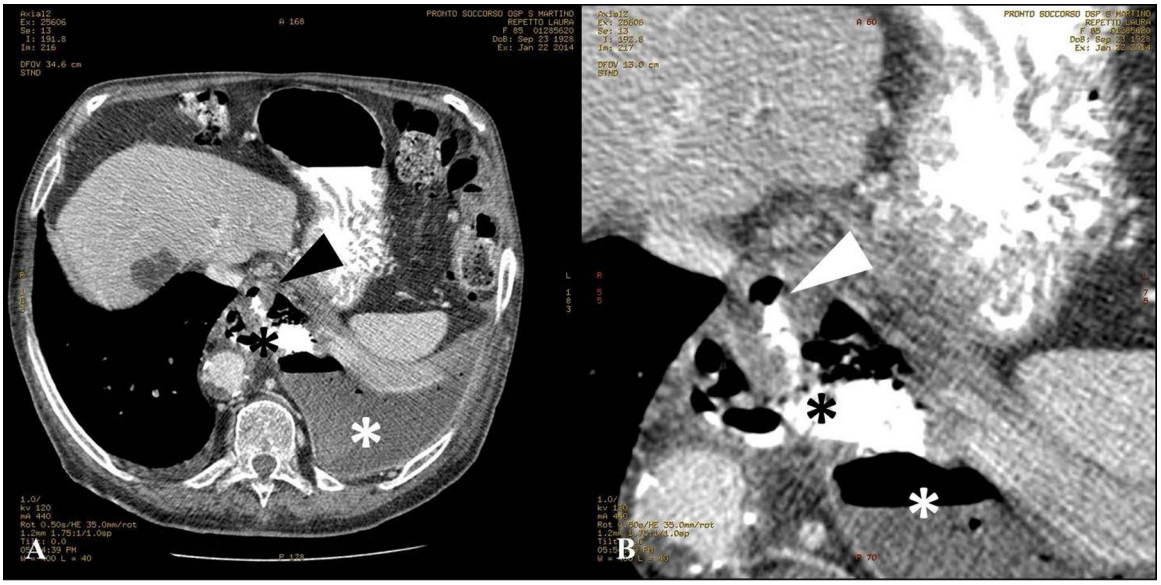

Fig. 2. (a) CT scan shows the contrast leakage from the oesophagus (black arrowhead) into the large mediastinal collection (black asterisk). The loculated pleural effusion is also evident (white asterisk). (b) Enlarged vision. Oesophageal perforation (white arrowhead), mediastinal collection (black asterisk), pleural collection with an air–water level (white asterisk).

about 3 cm in lenght was evident close to the gastro-oesophageal junction. The muscular layer around the perforation was diffusely necrotic and it was removed, thus widely exposing the mucosal layer. The bulging edges of the tear appeared to be inflamed and edematous but still viable. Two stay sutures were placed at both ends of the rupture (Fig. 3a). The mucosal edges were gently grasped with an Allis clamp, so that a 45 mm endoscopic articulating linear cutter (ENDOPATH® ETS-Flex, Ethicon Endo-Surgery) was twice-placed below them on healthy mucosa (Fig. 3b). The seal was tested. The nasogastric tube was then left in place into the stomach. The hiatus was slightly opened, and a limited portion of the gastric fundus was gained. Such kind of "gastric wrap" was wide enough to be positioned over the repaired mucosa and secured with interrupted absorbable stitches to the edges of the resected ooesophageal muscular wall. The lower lobe of the lung was decorticated. Three chest drainages were left in place. *Escherichia coli* and *Enterococcus faecalis* were cultured from the pleural fluid. The postoperative course was complicated by left lower lobe pneumonia and systemic infection by multidrug-resistant *Klebsiella pneumoniae*. A CT scan with oral contrast performed on postoperative day 9 confirmed the seal of the repair and excluded residual collections. The patient resumed a creamy diet. Chest drains were removed on postoperative day 11. The patient was finally discharged home on postoperative day 27 on a normal diet. Her oesophagogram performed after one month is shown in Fig. 4.

3. Discussion

Symptoms of spontaneous perforation of the oesophagus have been reported to be absent or very mild in the exceptional circumstances of a small and confined leak [1]. Late diagnosis is likely to occur in such cases [2]. Our patient presented with a seven days-lasting cohort of mild nonspecific symptoms in spite of a three centimeters oesophageal perforation associated with a large mediastinal and pleural collection. The discrepancy between the clinical and the surgical findings is worthy of note in our opinion. Unaccountably, the abscess was probably confined into the medi-