CONSERVATIVE MANAGEMENT OF ESOPHAGEAL PERFORATION FOLLOWING FOREIGN BODY INGESTION, A CASE REPORT

Mohammad Mozafar a, Ehsan Parvas a, Shahab Ghassemi a, Hosein Nakhaee 1,a and Ivan Inkov b

a Shohada-e Tajrish Medical Center, Tajrish Sq, Tehran, Iran., b SANLAS Preventica; Thoracic Surgery Fellow at Military Medical Academy of Sofia, Bulgaria.

ABSTRACT A19 years old female presented to Shohadaye Tajrish hospital with a retrosternal chest and back pain since the day before. Chest CT showed pneumo-mediastinum, although there was no sign of contrast leakage in imaging. We decided on conservative management for the patient. Symptoms and radiologic signs were diminished after three days in the ICU. This report has discussed the importance of early diagnosis, diagnostic modalities, and management in esophageal rupture cases.

KEYWORDS esophageal rupture, Boerhaave syndrome, foreign body, conservative management

Introduction
Spontaneous oesophageal perforation or Boerhaave syndrome occurs due to different etiologies, resulting in severe morbidity and mortality. Foreign body ingestion is responsible for oesophageal rupture in 7% of the cases (1-4). Depending on the time of the diagnosis and extension of perforation, the physician could choose operative or non-operative treatment. We present a case of a 19-year-old female with Boerhaave syndrome, treated conservatively following foreign body ingestion.

Case Presentation
A previously healthy 19 years old female student came to Shohadae Tajrish hospital GI office with a history of retrosternal chest and back pain since the day before admission. She mentioned odynophagia, dysphagia, with no feeling of a foreign body in her throat, following consumption of toasted bread which lasted for about twenty minutes and was followed by chest and back pain. The pain wasn’t radiating and didn’t relieve significantly by analgesics nor PPI. She didn’t mention dyspnea, nausea, or vomiting and had no history of allergy. She had a history of tonsillectomy fourteen years ago.

On physical examination, she wasn’t pale nor drowsy. The blood pressure was 110/80 mmHg with no pulsus paradoxus. No palpable subcutaneous emphysema was present. Chest expansions were regular and symmetric. Examiner heard no reduction in auscultation of the lung and heart. The physical examination of the abdomen showed nothing abnormal. Their heart rate was 88 beats/min, and she was afebrile. Her peripheral pulses were symmetric. CBC didn’t show leukocytosis, and coagulation status was normal.

A thoracic spiral CT without contrast showed signs of pneumo-mediastinum surrounding the upper oesophagus and extending to proximal branches of the aorta suggesting oesophageal perforation (fig 1). The patient was then referred to the general surgery department. A chest x-ray with oral contrast and a thoracic CT with oral and IV contrast was done. No sign of contrast leakage from the oesophagus (fig 2). A linear air density suggestive of pneumo mediastinum was seen parallel- ing the oesophagus in the thoracic outlet. There was no sign of pneumothorax or pleural effusion.

We planned non-operative management for our patient and admitted her to the ICU. The patient was started on an NPO diet, antibiotic therapy with ceftriaxone and metronidazole, and antiacid therapy with pantoprazole. The chest and back pain tended to relieve in three days. In addition, pneumo mediastinum was reduced in follow-up thoracic CT after three days.
Figure 1

Figure 2

Discussion

Boerhaave syndrome is a spontaneous transmural rupture of the oesophagus, which is relatively uncommon but can be severely lethal (1). Etiologies comprise iatrogenic causes (mainly endoscopy), trauma, tumours, and foreign body ingestion [3]. Foreign body ingestion is an infrequent cause of oesophagal perforation with complications such as pneumothorax, pyopneumothorax, pneumomediastinum, para oesophageal abscess, mediastinitis, and pericarditis (2). These complications can cause significant morbidity and mortality. For example, a case series of oesophageal perforation reported a mortality of 22%. Foreign body perforation was the cause of 7% of the cases (4). A literature review also showed an occurrence of Esophageal perforation in 1% to 4% of foreign body ingestion cases (1, 2).

It is important to stress that the prognosis of oesophageal perforation depends on early diagnosis since a late diagnosis can escalate the mortality rate (5). Unfortunately, diagnosis based on presentation is often challenging because the symptoms mimic other disorders such as myocardial infarction, gastric ulcer perforation, pancreatitis, aortic aneurysm dissection, spontaneous pneumothorax, or even pneumonia (2).

The notion of oesophageal rupture has been centred on the Mackler triad, including vomiting followed by chest or retrosternal pain and subcutaneous emphysema (6). However, most patients have more general presentations, including dyspnea, hypotension, sepsis, shock, coma, upper gastrointestinal bleeding, and undetermined chest or upper abdominal symptoms (4). This highlights the importance of high clinical suspicion and radiologic confirmation in diagnosing oesophageal rupture.

A plain chest x-ray can demonstrate oesophageal rupture in 90% of patients. Still, it may show no abnormality in the early stages (7). Contrast esophagography is believed to be the gold standard in diagnosing oesophageal perforation. Iodine, watersoluble contrast esophagography, is almost 100 % specific and approximately 75 % sensitive (8). Other contrast agents, such as gastrografin, are also advised due to their quick absorption. However, gastrografin extravasation might be perceived in just 50% of cervical and 75% to 80% of thoracic cases (4).

Computed tomography could be beneficial when perforations are difficult to localize or due to the patient's condition performing a contrast esophagography is not possible (2). CT findings in oesophageal perforation include extraluminal air, peri-oesophageal fluid, oesophageal thickening, and extra-luminal contrast (8).

Boerhaave syndrome could be managed non-operatively, endoscopic, or operatively. The determinants of therapy are the aetiology, the site, and the severity of the perforation, as well as the time, passed since the occurrence (9). The treatment objective is to prevent the spread of the contamination from the perforation, exterminate the infection, reestablish the integrity of the oesophagus, and establish nutritional maintenance (10).

Conservative treatment is merely reported in case reports. This approach to oesophageal perforation is suitable for patients with well-confined perforations with insignificant mediastinal and pleural contamination. Likewise, it is appropriate for cases with delayed diagnosis and merely slight symptoms (2).

The following criteria are also recommended in the literature for the selection of a non-operative approach:

1. Early diagnosis or leak contained in delayed cases;
2. The leak is contained within the neck or mediastinum or between the mediastinum and visceral lung pleura;
3. Drainage into the oesophageal lumen as demonstrated by contrast esophagogram;
4. Injury not in neoplastic tissue, abdomen, nor proximal to obstruction;
5. no symptoms and signs of septicemia
6. Contrast imaging and experienced thoracic surgeon Available (5, 10, 11).

In a non-operative approach, the patient should be NPO and receive total parenteral nutrition for at least 48 to 72 hours. Then, clear fluids can be started if the patient shows clinical progress. Broad-spectrum antibiotics should also be started for at least 7 to 14 days. If present, mediastinal or pleural fluid collections should be drained with chest tubes or CT-guided drainage catheters (12). This step was not necessary in our case since no fluid collection was evident.

Non-operative treatment of oesophageal perforation has resulted in a mortality of 18% (0% to 33%) in the literature (2). However, close to 100% survival rates have been reported (5, 9).

In general, conservative treatment consists of antibiotic therapy and percutaneous drainage of abscesses. It seems reasonable, especially if diagnosed after 48 h and patients are not septic. However, conservatively managed patients who show signs of sepsis should be operated on without hesitation (13).

Conclusion

The above case clarifies the importance of clinical suspicion in the early diagnosis and treatment of oesophageal perforation. In
suspected oesophageal perforation, CT scan and contrast esophagogram remain the most efficient diagnostic modalities. Non-operative management is suitable for certain well-defined situations. An individualized approach is required with each case.

**Funding**

This work did not receive any grant from funding agencies in the public, commercial, or not-for-profit sectors.

**Conflict of interest**

There are no conflicts of interest to declare by any of the authors of this study.

**References**


