

To cite this article. Ozgur C, Karamustafaoglu YA, Tuncbilek N. Esophageal perforation, aortic pseudoaneurysm and aorto-oesophageal fistula caused by ingestion of a chicken bone. *Curr Thorac Surg* 2023; 8(2): 106-108.

Case Report

Esophageal perforation, aortic pseudoaneurysm and aorto-oesophageal fistula caused by ingestion of a chicken bone

 Cihan Ozgur^{1*},  Yekta Altemur Karamustafaoglu²,  Nermin Tuncbilek³

¹Department of Radiology, Faculty of Medicine, Namik Kemal University, Tekirdağ, Turkey

²Department of Thoracic Surgery, Faculty of Medicine, Trakya University, Edirne, Turkey

³Department of Radiology, Faculty of Medicine, Trakya University, Edirne, Turkey

ABSTRACT

Esophageal foreign bodies are an emergency entity. Rarely, it can cause fatal complications such as aorto-oesophageal fistula. In this study, the authors present a case of esophageal perforation, aortic pseudoaneurysm, and aorto-oesophageal fistula in an adult male patient after chicken bone ingestion, resulting in a poor outcome. An urgent and multidisciplinary approach is very critical in the diagnosis, treatment, and clinical management of aorto-oesophageal fistula.

Keywords: aorto-oesophageal fistula, aortic pseudoaneurysm, chicken bone, esophageal perforation, foreign body

Corresponding Author*: Cihan Özgür, MD. Department of Radiology, Faculty of Medicine, Namik Kemal University, 59030, Tekirdağ, Turkey.

E-mail: cihanozguritf@gmail.com Phone: +90 5384514200

Doi: 10.26663/cts.2023.0018

Received 20.09.2022 accepted 28.12.2022

Introduction

Foreign body ingestion is one of the most common reasons for admission to emergency departments. The majority of foreign bodies pass through the gastrointestinal tract without causing any complications or sequelae [1]. However, foreign bodies can cause fatal complications in the gastrointestinal tract.

Here, we present the imaging findings and clinical features of a 56-year-old male patient with esophageal perforation, aortic pseudoaneurysm, and aorto-oesophageal fistula, which are rare complications of foreign body ingestion.

Case Report

A 66-year-old male patient was admitted to an external clinic with odynophagia that started after eating chicken. The patient was discharged with symptomatic treatment. Four days later, the patient presented to the emergency department with hematemesis and retrosternal pain. Her general condition was good and her hemodynamics was stable. Posteroanterior chest x-ray features were unremarkable to explain the symptoms. A contrast-enhanced computed tomography examination was performed. In the CT images, a linear-shaped hyperdense foreign body with a horizontal extension of 3 cm in the mid esophageal location at the level of the carina was seen (Figure 1). The esophagus was thickened at this level. The foreign body had penetrated the subcarinal area anteriorly and the thoracic aorta posteriorly. In addition, loss of integrity in the wall of the thoracic aorta at the penetration level and a pseudoaneurysm with a diameter of 7 mm was observed. No extravasation of the contrast agent was observed. Left pleural effusion was also seen (Figure 2). Emergency oesophagoscopy showed injury localization due to foreign body ingestion (Figure 3). The patient was operated on with a preliminary diagnosis of penetrating esophageal injury due to foreign body ingestion, and aorto-oesophageal fistula. After thoracotomy was performed through the 6th intercostal space, the mediastinal pleura was opened. The mediastinal hematoma was observed. A bone-shaped foreign body extending beyond the esophagus was seen above the carina level (Figure 4). Active bleeding from the thoracic aorta started following the removal of the foreign body. After manual compression, the aorta was sutured with mattress sutures of 4-0 polypropylene placed over teflon felt pledgets. The bleeding has been

stopped. Subsequently, the esophagus was sutured with a double layer of interrupted absorbable suture (mucosal and muscular planes) and reinforced of the suture by a pleural flap. Esophageal leakage was checked with methylene blue and none was detected. On the second day in the intensive care unit, the patient was urgently re-operated due to hemorrhagic contents coming from the thorax tube and a decrease in hemoglobin levels. Emergency thoracotomy was performed via the anterior 4th intercostal space and sutures were replaced over the old suture line after aortic cross-clamp. Bleeding was controlled. The patient was followed up in the intensive care unit under broad-spectrum antibiotic therapy. One day after the second operation, the patient developed respiratory failure and then died.

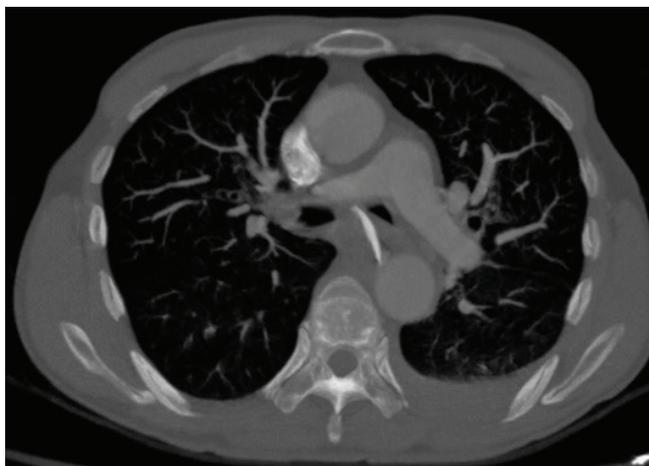


Figure 1. Axial maximum intensity projection computed tomography images show the extension of the foreign body from the subcarinal area to the aortic wall.



Figure 2. Axial contrast computed tomography shows hyperdense foreign body in the esophageal lumen (white arrow) and small pseudoaneurysm of the descending aorta (black arrow).



Figure 3. Penetrating injury localization due to foreign body ingestion was detected in oesophagoscopy.



Figure 4. Postinterventional image of the foreign body.

Discussion

Fish and chicken bones are the most common foreign bodies located in the esophagus [2]. Hemothorax, pneumothorax, pneumomediastinum, mediastinitis, soft tissue emphysema, cardiac tamponade, and aorto-oesophageal fistula are among the complications that can be seen due to foreign body digestion in the upper gastrointestinal tract [3]. The incidence of esophageal perforation due to foreign body ingestion has been reported as 1-4% [4]. Aorto-oesophageal fistula is a rare complication of foreign body ingestion. In the series of 2394 cases by Nandi et al, aorto-oesophageal fistula was reported at a rate of 0.08% [2]. The treatment of aorto-oesophageal fistula is complex and controversial. The operative option for each case is generated based on the patient's performance status and infection severity. The classical managements of aorto-oesophageal fistula were surgical correction with aortic cross clamping and cardiopulmonary bypass, simultaneous resection and repair of the thoracic oesophagus (although open repair has a 45–55% mortality rate), thoracic endovascular aortic repair (TEVAR) alone, and combined repair with TEVAR and open surgery [5]. Aortic suture or patch angioplasty can only be used for small lesions with cross-clamping. For larger lesions, aortic resection

must be applied into the well tissue. Aortic replacement is usually needed, particularly in cases with postoperative aorto-oesophageal fistula [6]. But both TEVAR and aortic replacement carry the risk of prosthetic and aortic stump infection, which can occur even as a long-term complication in an infective environment.

In conclusion, oesophageal foreign bodies are an emergency entity. Radiological imaging examinations play a critical role in diagnosis, especially contrast-enhanced computed tomography. An urgent and multidisciplinary approach is crucial in diagnosis, treatment, and clinical management. Delay in diagnosis and treatment increases the mortality rate [5].

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support.

Authors' contributions

CO; investigation, writing- reviewing and editing, YAK; resources, investigation, data curation, NT; supervision, project administration.

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