



Esophageal Perforation Due to Chicken Bone Ingestion: Multidetector CT Findings

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Mediastinitis Due to Esophageal Perforation

Selcuk Parlak¹, Esra Çıvgın¹, Elif Çelikel², Hamza Özer¹, Perihan Polattaş¹

¹Department of Radiology, Numune Education and Research Hospital,

²Department of Emergency Medicine, Numune Education and Research Hospital, Ankara, Turkey

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Öz

Yabancı cisim impaksiyonuna bağlı gelişen özefagus perforasyonunda hayatı tehdit edici komplikasyonların önlenmesi için erken tanı ve tedavi önemlidir. Erişkinlerde genelde perforasyon sebebi et, balık ve tavuk kemikleridir. Boğaz ağrısı, disfaji ve kusma sık görülen semptomlardır, ancak perforasyon eşlik ederse mediastinit gibi ciddi komplikasyonlar gelişebilir. 52 yaşında erkek hasta, 6 gün önce tavuk eti yedikten sonra ortaya çıkan boğaz ağrısı ve disfaji şikayetleriyle acil servise başvurdu. Toraks bilgisayarlı tomografisinde (BT) tavuk lades kemiğine ait Y şeklinde yabancı cisim gözlemlendi. Çok kesitli BT ile özefagus perforasyonuna bağlı mediastinal hava ve sıvı koleksiyonu gibi mediastinit bulguları da saptandı. Özefagustaki yabancı cisimler ve bunlara bağlı komplikasyonları göstermede çok kesitli BT önemli bir rol oynar.

Anahtar Kelimeler

Yabancı Cisimler; Özofagus Perforasyonu; Mediastinit; Çok Kesitli Bilgisayarlı Tomografi

Abstract

Esophageal perforation (EP) due to foreign body impaction requires early diagnosis and treatment in order to prevent life-threatening complications. EP in adults is most frequently caused by the impaction of meat, fish, and chicken bones. The common symptoms are sore throat, dysphagia, and vomiting, but in the presence of perforation, mediastinitis and other complications can occur. In our case, a 52-year-old man was admitted to the emergency room with a six-day history of sore throat and dysphagia after eating chicken. Computed tomography of the thorax revealed a Y-shaped foreign body resembling the wishbone of a chicken. Mediastinal air secondary to esophageal perforation and further evidence of mediastinitis were also discovered with multidetector computed tomography (MDCT). This case shows that MDCT plays an important role in detecting esophageal foreign bodies and their complications.

Keywords

Foreign Bodies; Esophageal Perforation; Mediastinitis; Multidetector Computed Tomography

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Corresponding Author: Selçuk Parlak, Radyoloji Kliniği, Ankara Numune Eğitim ve Araştırma Hastanesi, Samanpazarı, Ankara, Türkiye.

GSM: +905052499563 E-Mail: selcukparlakdr@gmail.com

Introduction

Esophageal perforation (EP) due to foreign body (FB) impaction is rare and requires prompt treatment [1, 2, 3]. The most common esophageal FB diseases in adults are caused by impacted meat or other food. Fish bones in particular have been known to cause EP in many countries [1, 2, 4, 5]. Cases of spontaneous and iatrogenic ruptures have also been observed. About 80–90% of ingested FBs pass spontaneously without complications, 10–20% of them require endoscopic removal, and approximately 1% require surgical procedures [1, 6]. A sharp object in the esophagus must be removed within 24 hours to minimize the risk of perforation, mediastinitis, or abscess [3, 4].

Case Report

A 52-year-old man was admitted to the emergency room with a six-day history of sore throat and dysphagia after eating chicken. He was afebrile on arrival and presented with an elevated WBC count ($18.3 \times 10^9/L$). Computed tomography (CT) of the thorax revealed a Y-shaped FB resembling the wishbone of a chicken in his proximal esophagus (Figure 1). Pneumomediastinum secondary to esophageal perforation and evidence of mediastinitis were also observed using multidetector CT (MDCT) (Figure 2). Upper gastrointestinal endoscopy confirmed the diagnosis and the chicken bone was removed from the patient's esophagus with a snare. An over-the-scope clip was applied to treat the esophageal perforation. A right thoracotomy was performed, which detected necrotizing mediastinitis. The mediastinal cavity was cleaned with betadine and saline. Empyema developed in the right hemithorax after the operation (Figure 3). The patient was discharged after two months of medical therapy.

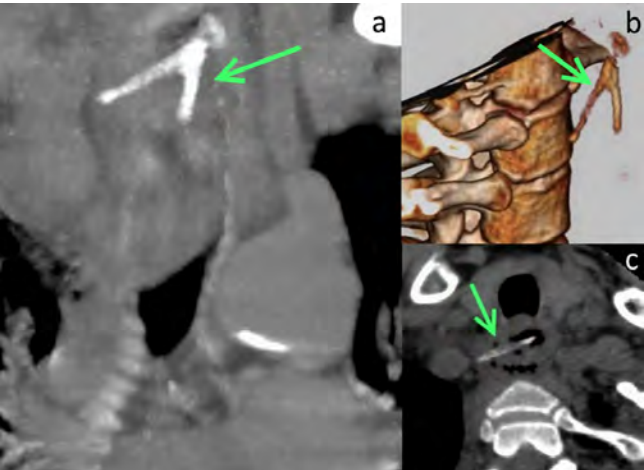


Figure 1. CT images of wishbone of the chicken in the esophagus. MIP and 3D images (a, b). Note that the chicken bone is extending outside the esophagus, representing esophageal rupture (c).

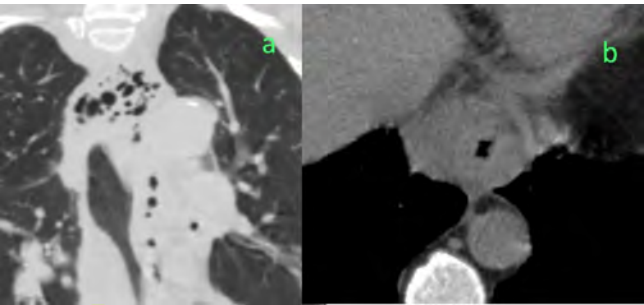


Figure 2. Pneumomediastinum (a). Paraesophageal fluid collections representing mediastinitis (b).

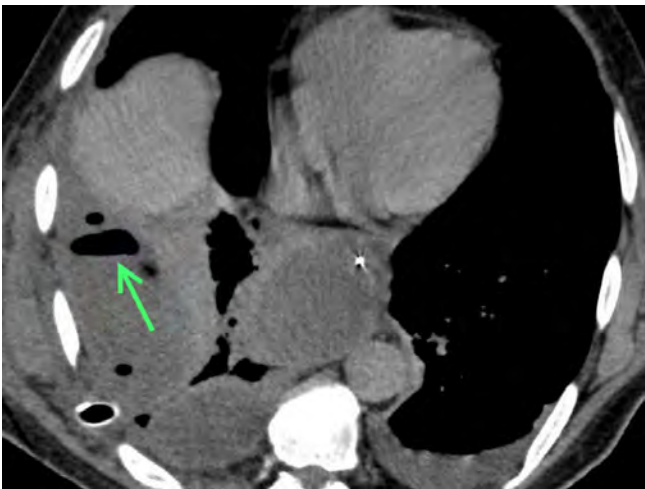


Figure 3. Right sided empyema and suspended air bubbles.

Discussion

Ingestion of FBs is a common occurrence, and the majority of such cases involve spontaneous passage of the FB through the esophagus [1, 6, 7]. Some patients may remain asymptomatic for many years, though EP is a potentially life-threatening condition with high rates of morbidity and mortality [1, 4]. EP occurs in only 1–2% of FB ingestion cases [6]. More attention should be paid to sharp FBs (e.g., metallic objects, chicken and fish bones, and toothpicks) due to a higher risk of perforation and mediastinitis [1, 2, 3, 4, 7]. EP due to FB ingestion usually occurs in the cervical esophagus, whereas spontaneous or iatrogenic injuries occur distally [1, 6]. The time that has passed between esophageal injury and initiation of treatment is the most important factor affecting mortality in cases of EP [4]. In this case, the patient was admitted to the emergency room six days after ingesting a chicken bone that had caused the perforation of his esophagus and mediastinitis. As this case demonstrates, early removal of FBs is necessary to prevent the development of mediastinitis [3, 4, 5].

Any degree of sore throat, dysphagia, odynophagia, difficulty breathing, and vomiting are common symptoms in esophageal FB diseases. FB sensation and localized pain are some patients' main complaints in the early periods of such diseases. As the disease progresses or complications develop, localized inflammatory or systemic symptoms, such as swelling of the neck, hematemesis, dysphagia, dyspnea, fever, and chest pain can occur [5, 6].

FBs in the alimentary tract should be evaluated carefully to identify their exact anatomic location [2]. Fiberoptic laryngoscopy or chest and neck X-rays can be performed to this end, but they are not always successfully diagnostic. Cervical or mediastinal emphysema, pleural effusion, or radiopaque objects may be seen on X-rays [1, 6]. FBs need to be radiopaque in order to detect them with X-rays, but radiolucent FBs are common and may not be noticed on radiographs [1, 3]. The most common radiolucent objects that can be ingested are fish and chicken bones, wood, plastic, and thin metal [1]. As such, radiography may not be a sufficient examination method for the detection of esophageal FBs [2]. Removal of these FBs must be performed within 24 hours of ingestion to prevent perforation and fistula formation [1, 4, 8]. The exact location of a foreign object can be

determined by MDCT quickly and with high diagnostic accuracy [2, 3]. MDCT should therefore be the first choice of imaging method to detect sharp esophageal FBs that do not show up by clinical inspection or radiographs. Slightly calcified FBs can appear on CT, which has higher contrast and spatial resolution [2]. CT has previously detected esophageal bone impactions with 90–100% sensitivity, with positive predictive rates as high as 99% (6). Wall thickening, surrounding soft tissue changes, and free air, and complications such as wall perforation, fistulae, and mediastinitis can also be detected with CT [1, 2, 3]. If complications are suspected, an intravenous contrast agent would be a great asset for the diagnosis process (1).

Proper treatment of esophageal FB diseases depends on the individual clinical situation. Conservative or surgical treatment options can be utilized [6]. Sharp objects, such as chicken or fish bones, should be removed carefully by endoscopy to prevent EP [6, 8]. In cases where perforations have been caught early, primary repair is preferred, but esophageal exclusion/diversions and thorough drainage may be needed. If there is no evidence of mediastinal contamination, endoscopic clips may be used in the treatment of acute esophageal perforations [8].

In conclusion, esophageally impacted FBs require quick diagnosis and treatment because of the risk of serious complications such as perforation and mediastinitis. Therefore, the first choice of diagnostic method should be MDCT, which can not only localize the FB, but will also display wall and surrounding soft tissue changes.

Competing interests

The authors declare that they have no competing interests.

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