Ruptured Aortic Pseudoaneurysm Secondary to Esophageal Perforation due to Chicken Bone Impaction: A Case Report

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Abstract

Background

Accidental foreign body impaction in older childern and adults is rare. The patient with an esophageal foreign body usually presents with dysphagia, hypersalivation, choking sensation, retrosternal discomfort, and drooling. If left unremoved, the esophageal foreign body can lead to complications including perforation, aortoesophageal fistula formation, and mediastinitis. Therefore, all impacted esophageal foreign bodies should be removed within 24 hours by urgent endoscopy to prevent risk of complications.

Case Presentation

We present a case of a 15-years-old child with pseudoaneurysm of aortic arch with mediastinitis secondary to prolonged esophageal obstruction by a chicken bone.

Conclusions

Aortic aneurysm caused by an esophageal foreign body is an extremely rare condition associated with high mortality and requires strict monitoring and comprehensive multidisciplinary care.

Keywords: *Aortic arch pseudoaneurysm, Case report, Esophageal foreign body, Flexible endoscopy*

Introduction

Esophageal foreign bodies are an emergency condition that is frequently encountered by all age groups. Bone is the most prevalent esophageal foreign body in adults in Nepal, accounting for 91.4% of all cases.[1] Common symptom include dysphagia, nausea/vomiting, odynophagia, and retrosternal discomfort.[2] Serious consequences, including neck abscess, esophageal perforation, mediastinitis, and artery and lung injury, may result from ingesting harp-pointed items like bone with a sustained period of impact.[3] Here, we present a rare case of a patient who accidentally ingested a chicken bone and was complicated with esophageal perforation, mediastinitis, and an aortic arch pseudoaneurysm that was effectively managed by multidisciplinary means of a combined endoscopic, medical, and endovascular treatment.

Case Report

A 15-year-old male presented to the Emergency Department of Dhulikhel Hospital with a three-day history of epigastric pain radiating to the left hypochondrium that began a day after ingestion of a chicken bone. The patient added there is a sensation of something ‘stuck’ in the lower chest. The patient has

no history of dysphagia with odynophagia, hemoptysis, hematemesis, neck and chest pain, dyspnea, vomiting, or shortness of breath.

On examination, there was a raised temperature of 100.8 F with an epigastric tenderness on palpation. Following examination, pre-procedure investigations were done, and under general anesthesia upper gastrointestinal endoscopy was performed which revealed an impacted chicken bone in the mid-esophagus lying transversely. The foreign body was removed successfully (figure 1).

On the first postprocedure day, the fever persisted and the patient had complaints of epigastric pain which did not improve even with medications. The next day, the patient added that he had severe epigastric pain, which was followed by an episode of hematemesis of about 400 ml of fresh blood. An immediate radiological evaluation with chest contrast-enhanced computed tomography (CECT) was done. It revealed a contrast-filled outpouching of size 25*13mm arising from the medial aspect of the arch of the aorta that was directed superomedially suggestive of a Pseudoaneurysm [Figure 2]. There was the presence of ill-defined hypodense collection with multiple air and foci on the left side of the middle mediastinum communicating with mid esophagus (corresponding to T3 vertebral level) through a suspicious mucosal breach.

The patient was immediately referred to another institution for intervention. An upper gastrointestinal endoscopy was done and mucosal ulceration was noted at 21 cm from the incisors. The cervical esophagus was mobilized and blunt dissection was carried up to the mediastinum during which an arterial bleed occurred. Gauze packing and median sternotomy were done during which about 500 ml of blood was lost. Median sternotomy revealed a bovine arch, a ruptured pseudoaneurysm of 1.5 cm in the medial aspect of the arch of the aorta noted, and the aorta was repaired under cardiac bypass, following which a cervical esophagostomy was done to mobilize the esophagus and an esophago-cutaneous fistula was made and a separate drain was placed. Finally, a midline laparotomy was done to create a feeding jejunostomy using a 12 Fr feeding tube.

Figure 1. Endoscopy revealing a slender and sharp chicken bone stuck in mid-esophagus transversely

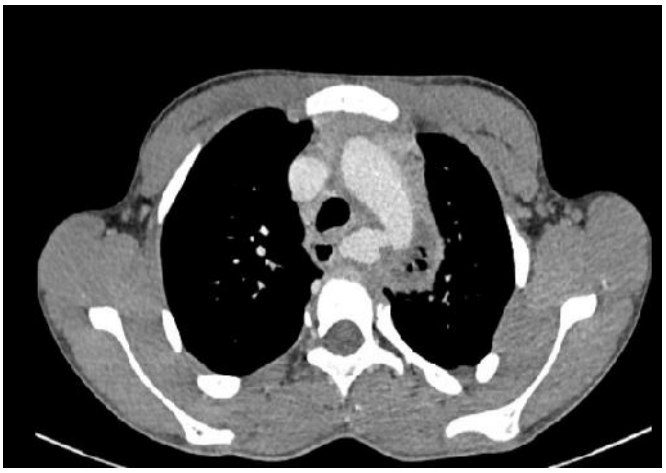

*Figure 2. CECT showing Contrast filled outpouching of 25*13mm size arising from the medial aspect of the arch of the aorta and directed superomedially.*

Discussion

Accidental ingestion of foreign bodies in the gastrointestinal tract, most frequently in the form of fish, chicken, mutton, or buffalo bones in the adult population in Nepal [1], [4]. The cervical esophagus is most frequently affected by foreign bodies (57% of cases), followed by the thoracic (26% of cases), and the cardiac esophageal junction (17% of cases). [5]

Dysphagia, odynophagia, nausea/vomiting, and retrosternal pain are typical symptoms.[2] When consuming sharp-pointed solids like bone over a prolonged period of time, there are possibilities of serious outcomes such as mucosal ulceration, esophageal perforation, mediastinitis, vascular trauma, aorto-esophageal fistula, pseudoaneurysm, para esophageal abscess, tracheoesophageal fistula, pneumothorax, pericarditis, and other conditions which are associated with a high mortality rate.[3],[6] In our case the patient had esophageal perforations leading to pseudoaneurysms. Esophageal perforation is a life-threatening condition with a mortality rate as high as 20% and the mortality can double if treatment is delayed for longer than 24 hours [7]

The propensity of delayed diagnosis leading to these complications might be explained by the ambiguous

nature of the symptoms, the delay in seeking medical attention, and the low diagnostic value of plain radiographs [3,6]. Like in our case, the patient has no history of dysphagia with odynophagia, hemoptysis, neck and chest pain, dyspnea, vomiting, or shortness of breath. In order to prevent serious complications and shorten the recovery period, effective treatments should be given as soon as possible when items, particularly sharp, pointed, and big objects, are identified as esophageal foreign bodies.[6]

The diagnosis of a foreign body is based on the evaluation of history which includes the type of foreign body, the time it was consumed, and persistent symptoms. Physical examination and imaging are done for the confirmation of diagnosis as well as to localize and identify the foreign body.[8]

The size, form, quantity, and placement of a radio-opaque foreign body can be confirmed by plain radiographs (anteroposterior and lateral views from the neck, chest, and abdomen) however, food bolus, thin metal objects, wood, plastic, glass, as well as fish or chicken bones, are not easily seen.[8] [9] Bones and glass may not be seen on x-rays. If nothing is seen on routine x-rays, but suspicion of a foreign body remains high, then diagnostic endoscopy or CT scan may be indicated. CT scans have a high sensitivity for detecting foreign bodies plus are useful for detecting complications such as perforation. Initially, a simple radiograph can be used However, it may not reveal the presence of bones and glass a diagnostic endoscopy or a CT scan may be recommended if nothing is visible on normal x-rays but the suspicion of a foreign body is still high.[10] In emergency conditions, imaging is not required in adult patients with suspected esophageal obstruction brought on by ingesting a foreign material, and it should not postpone prompt endoscopy.[10]

Upper endoscopy should be the first option for suspected esophageal foreign bodies because it allows for simultaneous diagnosis and retrieval.[11] Similarly, in our case we performed pre-operative investigations followed by flexible endoscopy and removal of impacted chicken bone from mid-esophagus.In comparison to the rigid instrument, the flexible upper endoscope provides a number of benefits, such as built-in suction, air insufflation, magnificence, the capacity to view the stomach and duodenum, and the absence of a requirement for general anesthesia.[12] Keeping the benefits in mind, we performed flexible endoscopy in our case. CT imaging is a quick and efficient way to see the pseudoaneurysm and its supporting components.[13] However, in our case, we performed CECT which revealed a contrast-filled outpouching arising from the medial aspect of the arch of the aorta that was directed superomedially suggestive of a Pseudoaneurysm. The median sternotomy is the preferred incision as in our case when the pseudoaneurysm is found on the ascending aorta or aortic arch.[14]

The cervical esophagus was mobilized and blunt dissection was carried up to the mediastinum during which an arterial bleed occurred. Gauze packing and median sternotomy were done during which about 500 ml of blood was lost. Median sternotomy revealed a bovine arch, a ruptured pseudoaneurysm of 1.5 cm in the medial aspect of the arch of the aorta noted, and the aorta was repaired under cardiac bypass, following which a cervical esophagostomy was done to mobilize the esophagus and an esophago-cutaneous fistula was made and a separate drain was placed. Finally, a midline laparotomy was done to create a feeding jejunostomy using a 12 Fr feeding tube.

Conclusion

Impaction of the esophageal foreign body for more than 24 hours can lead to dreadful complications. Thus, endoscopic guided removal of the foreign body esophagus should be done within 24 hours of obstruction. However in cases of delay in removal of the foreign body, complications like aortoesophageal fistula might have developed. Aortic pseudoaneurysm secondary to an esophageal foreign body is a rare and hemorrhage due to rupture of the pseudoaneurysm is a potentially fatal condition. In such cases, strict monitoring and comprehensive multidisciplinary care is warranted to decrease associated morbidity.

Consent

Written informed consent was obtained ensuring patient's anonymity

Declaration of competing interest

There are no conflicts of interest.

Acknowledgement

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