

CT Findings of an Aorto-esophageal Fistula due to Lye Ingestion: A Case Report¹

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Lye ingestion is a rare cause of an aorto-esophageal fistula (AEF). We report a case of a 75-year-old woman with an AEF due to lye ingestion. Since an endoscopy cannot be engaged into the esophagus due to orifice stricture, we adopted computed tomography (CT) as a diagnostic tool. An AEF was confirmed by surgery.

Index words : Esophageal Fistula

Lye

Tomography, X-Ray Computed

An aorto-esophageal fistula (AEF) is a relatively rare but life-threatening cause of upper gastrointestinal bleeding (1, 2). The most common causes of an AEF include a thoracic aortic aneurysm, foreign body ingestion, or esophageal malignancy. A small fraction of aorto-esophageal fistula cases were caused by surgical complications, esophageal reflux, tuberculosis, traumatic false aneurysms, corrosive esophagitis, congenital anomalies, atherosclerotic disease, and instrumentation (1-4). We report a case of an AEF induced by lye ingestion. A 75-year-old woman was admitted to our hospital due to hematemesis; two months before, she ingested two spoons of lye and was treated in our intensive care unit. She was diagnosed with an AEF by CT because the upper endoscopic approach was impossible due to severe esophageal stricture and pharyngeal edema. The patient had no other possible causes of AEF, which could have been caused by a thoracic aortic aneurysm or a esophageal malignancy. Two days later, a surgical

procedure (aortic repair, total esophagectomy and total gastrectomy) was performed.

Case Report

A 75-year-old woman was transferred from another hospital due to continuous, massive hematemesis. She had ingested two spoons of lye two months before. She did not have any organic disease except for a history of depression. A simple chest film did not show any abnormal findings except for multiple calcific nodules. Esophageal orifice stricture was observed on an emergency upper endoscopy. Therefore, we could not identify any bleeding focus (aorto-esophageal connection). Contrast-enhanced CT of the thorax showed a blood-filled esophageal lumen and enhancing outpouching sac from the descending aorta. The aortic sac was connected to the middle esophagus at the level of ninth thoracic vertebral body, leading to the suspicion of AEF (Fig. 1). Additionally, there are luminal narrowing and diffuse wall thickening at the orifice of the esophagus. In the surgical field, an AEF was confirmed, and the repair of the aorta and total resection of the esophagus and stomach were performed. Three months later, the patient recovered with self-breathing and a good general condi-

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tion.

Discussion

Aortoenteric fistulas account for less than 3.5% of all cases of upper gastrointestinal bleeding encountered in autopsies. An AEF is an abnormal communication between the esophagus and aorta. AEFs comprise less than 10% of all aortoenteric fistulas (1, 5, 6). The main causes of AEFs include thoracic aortic aneurysms (most common), foreign body ingestion, and esophageal malignancy. Other minor causes include surgical complications,

esophageal reflux, tuberculosis, traumatic false aneurysms, corrosive esophagitis, congenital anomalies, atherosclerotic disease, and instrumentation (1-4).

The most common complication of lye ingestion is esophageal stricture following corrosive esophagitis. Tracheal stenosis may occur if one aspirated lye into their trachea. An AEF or esophageal diverticulum is a rare complication. Of 500 patients with AEFs, six cases were caused by lye ingestion. In addition, AEFs have been reported as a rare consequence of corrosive esophageal injury (1). Over six years, Yegane *et al.* (6) investigated 1260 patients with caustic ingestion and iden-

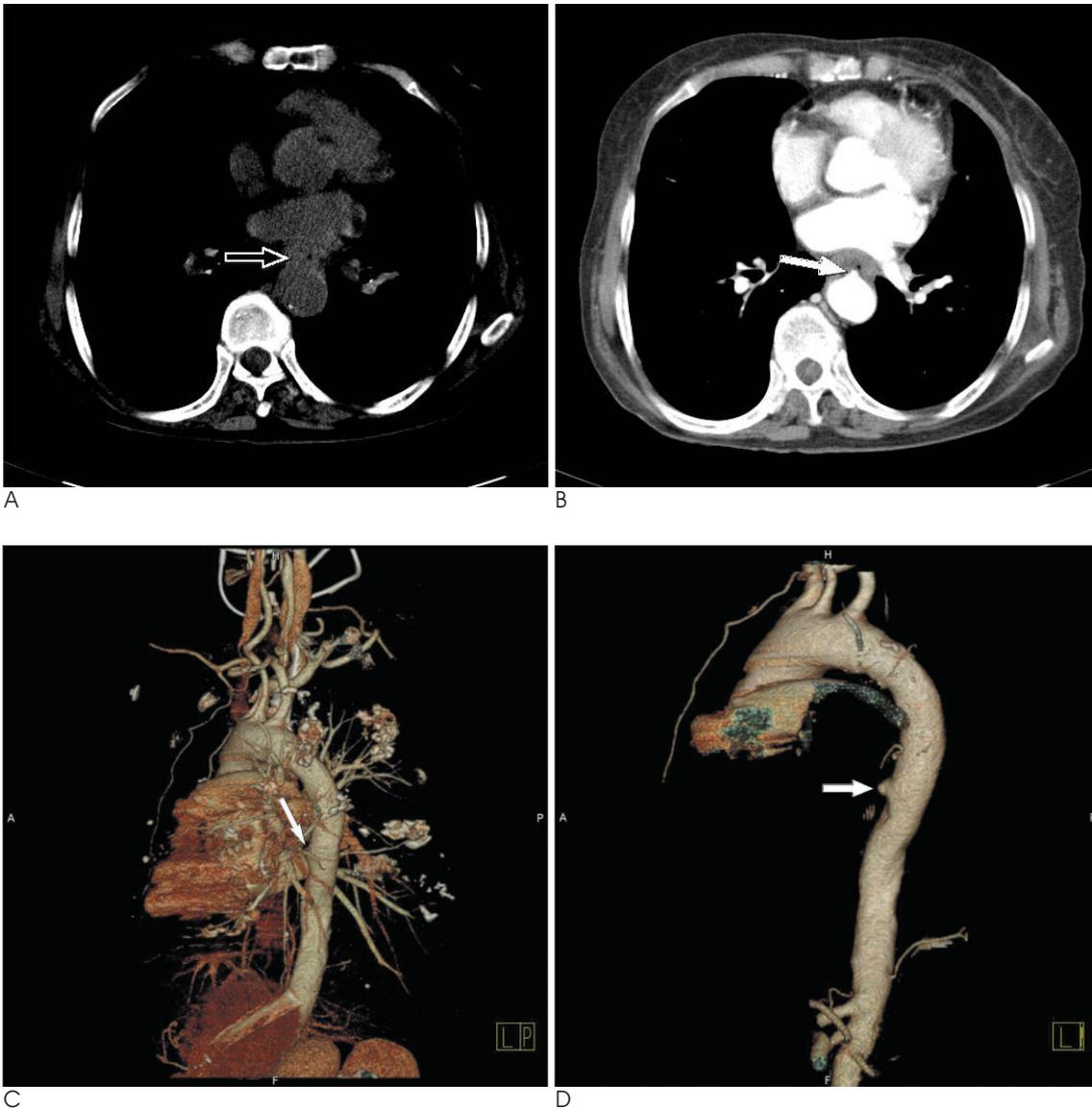


Fig. 1. An aortoesophageal fistula due to lye ingestion in a 75-year-old woman.

- A. Unenhanced axial CT image shows high attenuation in the esophageal lumen due to hemorrhage (open arrow).
- B. Contrast-enhanced axial CT image shows a contrast-filled small outpouching sac (arrow) from the thoracic aorta connecting into the esophageal lumen at the level of ninth thoracic vertebral body.
- C, D. 3-D reconstruction images using a volume rendering technique shows an small outpouching sac (arrow) from the aorta, which protruded into the esophagus.

tified only three AEF cases among them.

The classic Chiari triad of aortoesophageal syndrome is mid-thoracic pain or dysphagia, a sentinel episode of minor hematemesis, and fatal exsanguinations after a symptom-free period. Presentation with the classic Chiari's triad is usually diagnostic; however, most cases were diagnosed after death or at surgery (1-3). Various diagnostic tools can be considered for identifying AEFs. In particular, endoscopy, CT scan, and aortography are useful diagnostic tools for identifying the site of the fistula. An upper endoscopy is the most common diagnostic tool for identifying AEFs.

It is an important tool in identifying a connection between the aorta and the esophagus. In addition, a blood-filled lumen of the esophagus or a contrast leakage into the esophagus from the aorta sac could be detected (1, 6, 7).

After lye ingestion, esophageal deformity such as stricture frequently occurs, so an endoscopic approach can often be difficult. Moreover, endoscopy cannot evaluate extraluminal stricture, which made it even more difficult to confirm the relationship between the esophagus and aorta (1, 5, 8). Jiao et al. (9) reported a case misdiagnosed as an esophageal polyp by endoscopy. However, CT revealed an aortic pseudoaneurysmal sac compressed against the mid-esophageal wall. The aortography has several limitations as a diagnostic tool of AEF. If the patients have no current hemorrhage, the aortography can not prove AEF. Moreover, in unstable patients, an invasive aortography cannot be performed (1). However, CT scans do not interfere with diagnostic limitations such as an esophageal deformity and current hemorrhage. Additionally, CT is a non-invasive imaging tool and is useful for detecting the relationship among the aorta, esophagus, and surrounding structures (7, 10). As a result, CT can be the most powerful diagnostic tool to detect an AEF due to lye ingestion. In our case, we

could diagnose an AEF by CT scan instead of endoscopy because of proximal esophageal stricture. CT images showed a blood-filled esophageal lumen and an out-pouching aorta sac. The factors leading to an indication of the presence of an AEF included identifying a connection between the aorta and the esophagus.

In conclusion, the presence of an AEF after lye ingestion is very rare. Because lye induces mucosal destruction of the esophagus, an endoscopic evaluation is often impossible. Consequently, CT can be the only valuable diagnostic tool of an AEF by identifying the connection between the aorta and the esophagus.

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양젓물 섭취 후 발생한 대동맥식도루의 CT소견: 증례 보고¹

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이 윤 학 · 한 현 영

양젓물 섭취는 대동맥식도루의 드문 원인이다. 저자들은 양젓물 섭취 후 대동맥식도루가 발생한 75세 여자 환자에 대한 증례를 보고하고자 한다. 환자는 식도의 근위부에 협착이 있어서 내시경 진입이 어려웠고, 전산화단층촬영을 사용하여 대동맥식도루를 진단할 수 있었으며, 수술을 통하여 대동맥식도루가 확진되었다.