

Case Report

Corresponding author

James M. Nottingham, MD, FACS

Professor of Clinical Surgery

Department of Surgery

University of South Carolina

School of Medicine, Two Medical Park

suite 300, Columbia

SC 29203, USA

Tel. (803)545-5800

Fax: (803)933-9545

E-mail: james.nottingham@uscmed.sc.edu

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Lysine Pill-Induced Esophageal Perforation

Abdelziz Atwez, MD; Matthew Augustine, BS; James M. Nottingham, MD, FACS*

Department of Surgery, University of South Carolina School of Medicine, Two Medical Park, suite 300, Columbia, SC 29203, USA

ABSTRACT

Pill-induced esophagitis is being increasingly recognized, but remains largely underreported. Most patients suffer from self-limited pain but complications like esophageal hemorrhage, stricture, perforation and even death may occur. We present a rare case of esophageal perforation secondary to pill-induced esophagitis due to ingestion of Lysine tablets.

INTRODUCTION

Since first described in 1970 pill-induced esophagitis is being increasingly recognized. Most patients suffer from self-limited pain but complications like esophageal hemorrhage, stricture, perforation and even death may occur.¹ We present a rare case of esophageal perforation secondary to pill-induced esophagitis due to ingestion of Lysine tablets.

CASE REPORT

A 71-year-old male with no past history of esophageal disease or swallowing difficulties presented to a county hospital with severe substernal chest pain and odynophagia four hours after ingesting some over-the-counter Lysine tablets. He confirmed that he took the pills while lying down with a small amount of water. The initial x-rays and lab tests were normal and the esophagogastroduodenoscopy revealed significant ulceration of his distal esophagus. The patient was admitted for parenteral hydration and pain control. He subsequently developed a large right pleural effusion over the next several hours. Computed tomography scan of his chest showed an abnormality of the distal esophagus and esophageal perforation was subsequently confirmed by Gastrografin swallow. The patient was transferred to a tertiary care institution and underwent emergent right thoracotomy. With the delay in diagnosis and in transfer to definitive care, the patient was in florid sepsis at the time of the thoracotomy. Findings at that time were a three centimeter distal esophageal perforation, and significant contamination of the mediastinum and in the right pleural space. The perforation was debrided and closed in two layers with a muscle flap. The mediastinum was debrided as well and drains placed. Because of the tenuous closure in the face of the contamination a cervical esophagostomy was created for diversion. Postoperatively, the patient did well. He returned in three months for reversal of his cervical esophagostomy after documentation of his sealed leak on swallow study and distal esophagram.

DISCUSSION

Esophageal perforation due to pill-induced esophagitis is thought to be an unusual complication. Review of literature shows several cases of perforation reported after the use of potassium preparations, iron pills, alendronate, ibuprofen, tetracycline, doxycycline, and sustained-release sodium valproate. Cases of penetration to the left atrium and major vessels led to severe hemorrhage and death were also reported.²

Despite being increasingly recognized, pill-induced esophagitis is believed to be underreported with an incidence of four cases per 100,000 populations per year.^{1,2} Since first described in 1970 more than 1300 cases have been reported in which more than 100 different drugs were implicated.²

Pill-induced esophagitis usually occurs at anatomical sites of esophageal narrowing but any area of the esophagus may be injured. The most common site of injury is the middle third of the esophagus where peristaltic amplitude is relatively low and where the esophagus may be compressed anteriorly by the aortic arch.² Patients with left atrial enlargement are susceptible to injury at the site where the esophagus is compressed by the left atrium.²

The most common medications that cause pill-induced esophagitis can be divided into four major groups based on prevalence: antibiotics such as tetracycline, doxycycline, and clindamycin accounting for about 50% of reported cases; anti-inflammatory medications such as aspirin and non-steroidal anti-inflammatory drugs were the culprit in about 20% of reported cases; bisphosphonates such as alendronate and resdronate were the cause in about 15% of cases; and medications such as potassium chloride, quinidine preparations, and iron compounds were found to be the cause in the vast majority of the other reported cases.²

Risk factors for pill-induced esophagitis can be patient-related, esophageal-related and drug-related. Patient factors consist of age, swallowing positioning, and amount of liquid ingested while taking medications. The risk of pill-induced esophagitis increases with age, however, this may be due to higher medication use, decreased saliva production, or a higher prevalence of anatomic abnormalities and motility disorders in the esophagus rather than physiologic changes in motility with aging. The position of the patient, and the amount of fluid ingested with the medication may be the most important determinants of the risk of pill-induced esophagitis, as significant delay in esophageal transit occurs when pills are taken in supine position without adequate amount of fluid. Ingestion of a pill immediately prior to sleep is also associated with an increased risk of pill-induced esophagitis as both salivation and swallowing frequency are markedly reduced during sleep.^{2,3}

Altered esophageal anatomy may also be a risk factor for pill-induced esophagitis by increasing esophageal transit time. This is supported by the observation of a higher incidence in patients with left atrial enlargement and following thoracic surgery.² Esophageal stricture, dysmotility and other anatomic abnormalities such as esophageal webs and rings also increase the risk of pill-induced injury by causing a prolonged contact between the medication and the esophageal mucosa.^{2,3} Although anatomic abnormalities may increase both the risk of pill-induced injury as well as the severity of the resulting complications however, most cases of pill-induced esophagitis occurred in patients with no prior history of swallowing difficulties.³

Drug factors are comprised of the pill size, the formulation, and the intrinsic caustic or injurious characteristics of the pill being ingested. Delay in esophageal transit was observed when larger tablets were swallowed with small quantities of water.² Capsules are more commonly retained in the esophagus

than tablets, and the sustained-release preparations are more damaging to the esophagus than standard preparation of the same medicine.^{2,3}

The proposed mechanisms of direct injury by medications include the production of a caustic acidic solution, caustic alkaline solutions, hyperosmolar solutions, and the direct drug toxicity.^{2,3} A pH less than 3.0 is corrosive to the human esophagus. Medications such as doxycycline, tetracycline, ascorbic acid, ferrous sulfate, and emepronium can cause local caustic injury as they have a pH less than 3 when dissolved in distilled water or saliva. Bisphosphonates produce a caustic alkaline solution. Potassium chloride creates a hyperosmolar solution in contact with esophageal mucosa leads to tissue destruction and vascular injury. Tetracycline can cause cell toxicity by inhibiting protein synthesis. And NSAIDs may cause esophagitis by disrupting the normal cytoprotective prostaglandin barrier in the stomach and esophagus.^{2,3}

Patients with pill-induced esophagitis usually present with retrosternal pain, odynophagia, and less commonly dysphagia within a few hours to a month after ingesting the culprit medication. In some cases, the pain may be so severe that swallowing is impossible compromising hydration and alimentation.^{2,3} Pill-induced esophagitis must be suspected when a patient presents with an abrupt retrosternal pain and odynophagia, and has a history of ingestion of potentially injurious medication. In such cases a clinical diagnosis of pill-induced esophagitis may be made.^{2,3} Endoscopy is the gold standard for diagnosis of pill-induced esophagitis⁴; however, gastrografin swallow is used when esophageal perforation is suspected.

The most important aspect of management of pill-induced esophagitis is to avoid further esophageal injury and most cases heal without intervention within a few days of discontinuing the culprit medication. Acid suppression therapy is justified when gastroesophageal reflux is documented. Patients with severe odynophagia who are unable to eat or drink may require short-term parenteral hydration or alimentation. Endoscopic dilation may be needed subsequently in patients with an esophageal stricture.^{2,4} When esophageal perforation is diagnosed, then expeditious operative care with debridement, repair with muscle flap, and wide drainage is done. Lately the other option is with covered stenting to prevent the operative morbidities in select patients.

Prevention is the mainstay strategy to reduce the incidence of pill-induced esophagitis. Medications should be taken with at least 240 mL (8 oz.) of water; patients should stand or sit upright for at least 30 minutes afterwards. Medications associated with esophagitis should be avoided or used with caution in patients with predisposing factors.

Our patient suffered a rare complication of pill-induced esophagitis in that he progressed to perforation. There is no other case of Lysine pill-induced esophagitis with perforation has

been reported.

CONFLICTS OF INTEREST: None.

CONSENT

As our article did not publish any personal photo or information regarding any of the patient thus the consent is not required for the article publication.

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