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Doxycycline induced pill oesophagitis: A case report

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Abstract

Doxycycline, along with other medications such as nonsteroidal anti-inflammatory drugs, tetracycline, and bisphosphonates, is notorious for causing pill-induced mucosal injury of the oesophagus. It usually manifests as retrosternal chest pain, dysphagia, and odynophagia following ingestion of an offending medication. Endoscopy shows multiple ulcers on the oesophagus. Treatment involves discontinuation of the offending agent, intravenous fluids, PPIs, and sucralfate solution. Resolution of symptoms occurs within 7-10 days of treatment. Proper counselling before prescribing such medications and applying preventive measures after consuming such medications reduces adverse outcomes.

We report a case of a lady of 25 years who presented with pill-induced oesophagitis after oral Doxycycline prescribed for Brucellosis. Retrosternal burning, painful with difficulty in swallowing and endoscopy findings of oesophageal ulcer confirmed the diagnosis. She was successfully managed with switching oral to intravenous Doxycycline, proton pump inhibitor, sucralfate and other conservative management.

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Introduction

Pill-induced esophagitis is a clinical condition characterized by oesophageal mucosal injury in patients receiving therapeutic dose of certain offending medications.[1] These medications can severely harm the oesophageal mucosa either by direct contact or through systemic effects.[2,3] The true incidence and prevalence of pill-induced esophagitis is generally difficult to predict because mild to moderate cases go unreported and only severe cases receive medical attention.[2] Some medications with a track record of causing esophagitis are nonsteroidal anti-inflammatory drugs (NSADs), bisphosphonates and antibiotics like doxycycline, tetracycline and rifampin.[4,5] Interestingly, dietary supplements like L-arginine, selenium, and vitamin E have also been reported to cause esophagitis.[6]

Clinical symptoms of pill-induced esophagitis typically include retrosternal chest pain, odynophagia, and dysphagia. While mild to moderate cases often resolve within a week, severe complications such as bleeding and perforation can occur, necessitating close monitoring and vigilance.[7,8] The incidence of esophagitis, even with commonly prescribed medications, underscores the importance of case reporting. Accordingly, we present this case with a typical history and endoscopic features of oesophageal mucosal injury after doxycycline therapy, hence contributing to the growing body of evidence on pill-induced esophagitis.

Case report

A 25-year-old female presented to the outpatient department (OPD), Vayodha Hospital, Kathmandu, Nepal with complaints of sudden-onset retrosternal chest pain, dysphagia, and odynophagia that had persisted for three days. She had no prior history of similar symptoms.

Ten days before this visit, she had been diagnosed with brucellosis based on clinical and laboratory findings and was prescribed oral doxycycline, 100 mg twice daily, for a 14-day course. She reported taking the medication as instructed but admitted to consuming it immediately before going to bed at night. She did not follow preventive measures such as swallowing the medication with adequate water or avoiding lying down immediately after ingestion, as advised by her physician.

After taking doxycycline for seven days, she began experiencing retrosternal chest pain, accompanied by difficulty swallowing (dysphagia) and pain during swallowing (odynophagia). Concerned about her worsening symptoms, she presented to the gastroenterology OPD, Vayodha Hospital, for further evaluation.

On physical examination, there were no significant systemic or local findings. Vital signs were stable, and abdominal and cardiopulmonary assessments were unremarkable. Baseline laboratory investigations, including complete blood count, renal and liver function tests, and a urine routine examination, were all within normal limits. A stool antigen test for Helicobacter pylori was negative. Cardiac causes were ruled out through normal cardiac biomarkers and an unremarkable ECG. Ultrasonography of the abdomen did not reveal any abnormalities. The upper gastrointestinal endoscopy revealed multiple ulcers in the oesophagus, strongly suggestive of pill-induced esophagitis, Figures 1 and 2.

A diagnosis of pill-induced esophagitis was established based on the history, the characteristic findings on endoscopy, and the temporal association with doxycycline use.

Management included stopping the offending medication, ‘oral doxycycline’, and was replaced with its intravenous formulation to continue her treatment for brucellosis without exacerbating the oesophageal injury. She was started on oral proton pump inhibitors (PPIs) to reduce gastric acid secretion and promote mucosal healing. A sucralfate solution was prescribed to provide a protective barrier over the damaged mucosa. In addition, intravenous fluids were administered to ensure adequate hydration and support recovery. Over the next seven days, the patient’s symptoms gradually improved. She began to tolerate oral feeds and was subsequently transitioned to oral PPIs before discharge. Her treatment for brucellosis was completed with intravenous doxycycline. At a one-month follow-

up, the patient reported being completely asymptomatic, and a repeat clinical evaluation showed no residual issues.

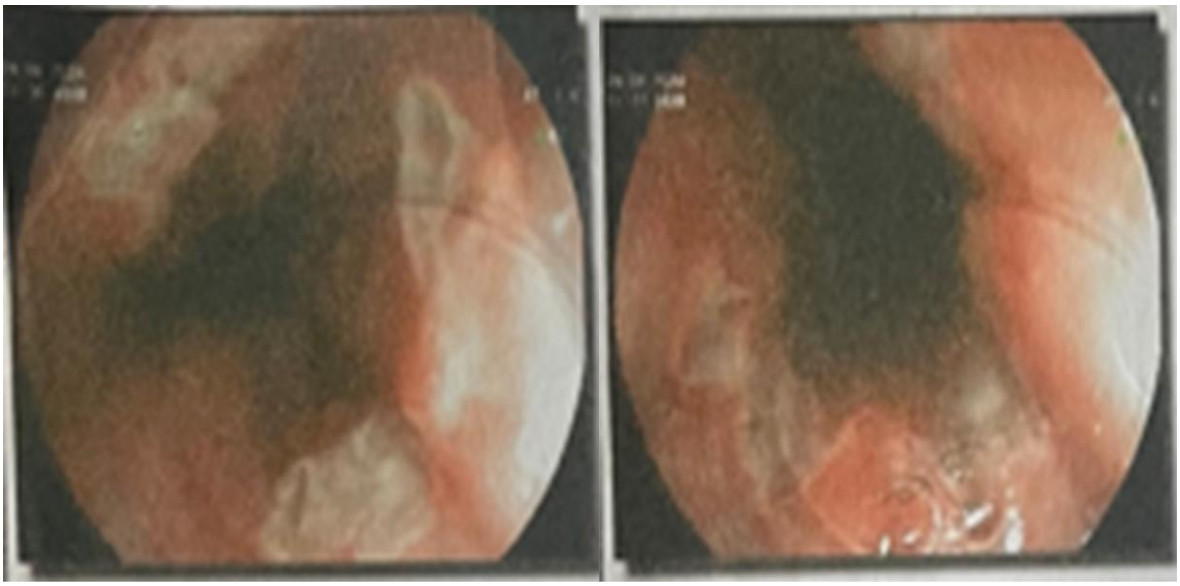

Figure 1 Figure 2

Figures 1 and 2. Endoscopy showing multiple discrete superficial whitish ulcers in the oesophagus, largest ulcer measuring 15 mm x 15 mm at 30 cm from the incisors.

Discussion

We report a successfully diagnosed and managed case of a patient with pill-induced oesophagitis and ulcers after use of Doxycycline pill. Pill-induced esophagitis is a condition characterised by oesophageal mucosal injury due to oral consumption of certain offending medications, even when prescribed within therapeutic limits.[1] Doxycycline, along with other medications such as NSAIDs, tetracycline, and bisphosphonates, is notorious for causing pill-induced mucosal injury of the oesophagus. It is often underdiagnosed, partly due to a lack of awareness and partly because the clinical presentation can resemble other diseases such as coronary artery disease, gastroesophageal reflux disease, and peptic ulcer disease.[9] It often occurs due to prolonged contact of the oesophageal mucosa with the medication.[10] Many patients develop pill-induced esophagitis after taking offending medications with insufficient water, especially just before going to bed.[9,11] Insufficient water while swallowing increases the likelihood of drug retention in the oesophagus, contributing to the development of oesophageal mucosal injury.

Additionally, taking pills at bedtime may promote pill retention in the oesophagus, as the supine position reduces the effect of gravity, and decreased salivation and swallowing during sleep further facilitate the retention of the pill.[11,12] This can be prevented by swallowing the medication with an adequate amount of water i.e. 100 ml while in an upright position for 15-30 minutes after taking the medication.[9]

Oesophageal factors include functional and anatomical variations of the oesophagus such as motility disorders and narrowing or strictures of the oesophagus. The drug factors include the chemical nature of the drug (intrinsic caustic characteristics), solubility, sustained-release formulations, and contact time with the mucosa.[2,10,11] The capsule form of drugs is more prone to causing mucosal injury than the tablet form, as capsules are more likely to get stuck in the oesophageal mucosa.[3] Nearly fifty per cent of cases are caused by antibiotics, with

tetracycline, doxycycline, and clindamycin being the most common, followed by penicillin. Other drugs commonly associated with this condition include NSAIDs, bisphosphonates, and potassium chloride.[2]

The most common symptoms are sudden onset retrosternal pain or heartburn, odynophagia, and dysphagia. The symptoms usually occur within the first three days, often beginning within hours after taking the associated medication.[2,9]

Along with the typical clinical presentation and confirmation with gastrointestinal endoscopy, are diagnostic.[9] On upper GI endoscopy, focal epithelial damage, discrete single or multiple ulcers along with relatively normal surrounding mucosa are typical findings.[11,12] The middle segment of the oesophagus is the most commonly affected area, as it is compressed by the aortic arch and left atrium.[9,11] Due to slow transit time and prolonged contact time in this area of the oesophagus, dissolution of drugs takes place, harming oesophageal mucosa.[11,13] In case of delayed diagnosis, various complications may take place like oesophageal bleeding, ulceration, perforation, stricture or even death.[9] Pill-induced esophagitis can be managed by discontinuation of the offending medication and administration of PPIs, topical anaesthetics, sucralfate solution, and analgesics.[9,11,12]

In our case, the patient presented with above mentioned symptoms following consumption of doxycycline, and upper GI endoscopy showed multiple ulcers on the oesophagus. She was advised to discontinue oral doxycycline and was switched to intravenous doxycycline along with addition of PPIs and sucralfate solution. These measures were sufficient to alleviate the symptoms and heal the ulcers.

Pill-induced esophagitis is often a preventable and underdiagnosed condition, though severe complications can occur if not timely managed.[2,11] Proper patient education about the drug, its adverse effects, and the correct method of drug intake should be provided by the physician to avoid such serious complications.[1]

When a similar history and symptoms of pill esophagitis are present, proper medical evaluation should be done and appropriate measures should be taken to avoid serious complications.

Conclusion

In the present case, a lady of 25 years with pill-induced oesophagitis after oral Doxycycline, who presented with retrosternal burning, painful difficulty in swallowing, had oesophageal ulcers on endoscopy findings was successfully managed with switching oral to intravenous Doxycycline, proton pump inhibitor, sucralfate and other conservative measures. Counselling before prescribing and preventive measures include taking a glass of water and avoiding lying down immediately after taking medicine.

Author contribution

Concept design: PD, AD, RD; Literature search: PD, AD, RD; Data analysis: PD; Draft manuscript: PD, AD, RD, PS, MS, SS, SA, NS; Final manuscript and accountability: All

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Conflict of interest

None

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Consent

All the appropriate patient consent has been taken in the form of verbal and written. In the consent form, the patient gave consent for her images and other clinical information to be reported in the journal. The patient was counselled that her name and initials would not be published and due efforts would be made to conceal the identity, but anonymity cannot be guaranteed.

Supplementary material

The data and supplementary material that support the findings of this study are available from the corresponding author upon reasonable request.

References

1. Liu Z, Yang L. Doxycycline-induced ooesophageal ulcers: two case reports. J Gastroenterol Hepatol. 2024;10(8):1-4. Google Scholar Full Text
2. Bestetti AM, de Oliveira VL, Vieira Ribas PHB, Hemerly MC, de Moura EGH. Doxycycline-induced pill esophagitis: a case report. Clin Case Rep Int. 2022;6:1368. Google Scholar Full Text
3. Priyadarshi K, Panda S, Ranjan A, Yadav D, Nafe Z. Doxycycline-Associated Ulcerative Esophagitis: A Report of a Rare Case. Cureus. 2024 Apr;16(4):e58079. DOI PubMed Google Scholar Full Text
4. Abdi S, Masbough F, Nazari M, Abbasinazari M. Drug-induced esophagitis and helpful management for healthcare providers. Gastroenterol Hepatol Bed Bench. 2022;15(3):219-24. PubMed Google Scholar Full Text
5. Smith SJ, Lee AJ, Maddix DS, Chow AW. Pill-induced esophagitis caused by oral rifampin. Ann Pharmacother. 1999 Jan;33(1):27-31. Google Scholar Full Text
6. O'Donnell C, Tandon P, Govardhanam V, Habal F. Pill-Induced Esophagitis From Intake of Dietary Supplements. ACG Case Rep J. 2019 Jun 25;6(6):e00106. DOI PubMed Google Scholar Full Text
7. Patel DK, Panchal YN, Patel MM, Rajput SL, Patel MV, Patel MJ. Clinical and endoscopic features of pill-induced esophagitis. Int J Basic Clin Pharmacol. 2022;11(2):122-7. Google Scholar Full Text
8. Dağ MS, Öztürk ZA, Akın I, Tutar E, Çıkman Ö, Gülşen MT. Drug-induced ooesophageal ulcers: case series and the review of the literature. Turk J Gastroenterol. 2014 Apr;25(2):180-4. Google Scholar Full Text
9. Roro GM, Folvik G, Louis L, Bane A. Drug-induced ooesophageal injuries with an atypical presentation mimicking acute coronary syndrome. BMC gastroenterology. 2021 Dec;21:1-4. DOI PubMed Google Scholar Full Text
10. Vãlean S, Petrescu M, Cãtinean A, Chira R, Mircea PA. Pill esophagitis. Rom J Gastroenterol. 2005 Jun;14(2):159-63. Google Scholar Full Text
11. Kadayifci A, Gulsen MT, Koruk M, Savas MC. Doxycycline-induced pill esophagitis. Dis Oesophagus. 2004 Jun 1;17(2):168–71. PubMed Google Scholar Full Text
12. Akbayir N, Alkim C, Erdem L, Sakiz D, Sökmen HM. A case report of doxycycline induced ooesophageal and gastric ulcer. Turk J Gastroenterol. 2002 Dec;13(4):232-5. PubMed Google Scholar Full Text
13. Pemmada V, Shetty A, Murali M, et al. Pill esophagitis: clinical and endoscopic profile. J Dig Endosc. 2023;14(3):197-202. DOI Google Scholar Full Text