



Rx Update

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MEDICATION-INDUCED ESOPHAGEAL IRRITATION

Some medications can cause esophageal complaints (e.g., pain when swallowing or difficulty swallowing) that can lead to esophageal damage. Drug-induced esophageal damage can be caused by direct mucosal contact with a corrosive medication. Certain patient risk factors can also play a part in the likelihood of a medication causing esophageal damage. Medications will not directly injure the esophagus if they can pass rapidly through the esophagus into the stomach.

Certain pharmaceutical factors of drugs may make them more likely to induce esophageal injury. Acidic drugs and drugs that dissolve quickly are more likely to cause direct esophageal mucosal damage. Gelatin capsules are stickier than tablets and are more likely to become lodged in the esophagus if not taken with adequate water, which can prolong the transit time and increase the exposure of the medication to the esophageal mucosa. Long-acting, enteric-coated, and slow-release oral solid formulations are generally bigger in size and are more likely to get stuck in the esophagus, which could release a concentrated amount of the medication and cause damage. Immediate-release or liquid formulations are less likely to cause this problem.

Tetracyclines (e.g., tetracycline, doxycycline, minocycline) are the most commonly reported medications to cause esophageal injury. The exact mechanism of tetracycline-induced esophagitis is not known, but may be because they quickly dissolve and are acidic. **Potassium chloride** formulations, especially extended-release and wax-matrix tablets, have been associated with severe esophageal damage and death. Due to their corrosive nature, potassium chloride tablets that lodge in the esophagus can cause mucosal damage, especially when the patient is lying down. **Bisphosphonates** (e.g., alendronate, risedronate, ibandronate) are corrosive agents and can cause esophageal injury, especially if they are not taken with a full glass water and the patient does not remain upright for 30 to 60 minutes after the dose. **Nonsteroidal anti-inflammatory drugs** (NSAIDs) (e.g., ibuprofen, naproxen, aspirin) can cause esophageal damage which is likely due to direct toxic effect on the esophageal mucosa. Other medications that have been associated with drug-induced esophageal injuries include **quinidine, theophylline, captopril, phenobarbital, ascorbic acid, ferrous sulfate, warfarin, phenytoin, nifedipine, diazepam, thioridazine, clindamycin, penicillin, ampicillin, rifampin, trimethoprim, and erythromycin.**

Drugs that have **anticholinergic properties** (e.g., antihistamines, antimuscarinics, certain antipsychotics, antidepressants) can decrease the amount of saliva produced causing difficulty swallowing pills and slow GI motility. This can cause the medication to remain in the esophagus longer causing more exposure to corrosive drugs. Therefore, anticholinergic agents can increase a patient's risk of developing drug-induced esophageal damage when taken concomitantly with high-risk drugs.

All patients are at risk of esophageal damage when taking medications that are irritating, even patients with normal esophageal motility. However, patients who are at increased risk of drug-induced esophageal injury include the **elderly, patients with Parkinson's disease, patients with a swallowing or reflux disorder or diabetic gastroparesis patients,** and all hospitalized patients because they are likely to be recumbent.

Most cases of drug-induced esophageal injury are caused by prolonged contact of the esophagus with the drug because the patient is not taking the medication correctly. **It is important to drink plenty of water (at least 100 ml or approximately 4 oz) when taking an oral solid dosage form.** Patients should be instructed not to take their medication with just a sip of water. Drinking water prior to medication ingestion to lubricate the esophagus may also help. **The patient should take all pills in the upright posture and not lie down right after taking oral medication** to prevent the medication from staying in the esophagus too long and minimize the chance the medication will be refluxed back up. All patients should be advised to remain upright for at least five to ten minutes after swallowing solid medications (at least 30 to 60 minutes for bisphosphonates). **For high-risk patients, safer alternatives may be to use oral liquid preparations, coated tablets, or crushing tablets.** Patients should avoid alcohol while taking drugs with a high potential of causing esophageal damage. They should also be encouraged to report any difficulty swallowing or pain. If esophageal discomfort occurs, the suspected offending agent should be stopped and the patient should be evaluated.