

Acute Corrosive Ingestion: What I Should and Should Not Do Before Patient Referral?

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Children constitute 80% of all corrosive ingestion cases. Majority of this burden is contributed by developing countries. Accidental ingestion is common in younger children (<5 years) while suicidal ingestion is more common in adolescents. Severity of injury depends on nature of corrosive (alkali or acid), pH, full or empty stomach, amount of ingestion and site of exposure. Acute ingestion leads to skin, respiratory tract or upper gastrointestinal damage which may range from trivial to life threatening complications. Many of the times, the nature and volume of corrosive is unclear from the history specially in toddlers. Acids are available as pungent liquids; hence their intake is limited as soon as it is consumed accidentally. Alkalis are available both as liquids or solids (eg: soap and detergents). Since alkalis are tasteless, their consumption is higher before the patient realises the mistake. Esophagoduodenoscopy (EGD) early in the course is essential. GI strictures (esophagus and/or gastric) are a major sequelae in the long run requiring endoscopic or surgical management.

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A) What I Should NOT Do?

- 1) **Do not perform gastric lavage and induction of vomiting.** These are erroneous practices after accidental ingestion of corrosive. In a survey performed recently in India, it was found that 57% of referred cases had history of induced emesis by the primary physicians. Any effort of induced vomiting will lead to re-exposure of esophageal mucosa to the corrosive and increased risk of laryngeal and bronchial aspiration.
- 2) **Do not give cold milk.** Ingestion of cold milk is not useful and may lead to aspiration and obscures an endoscopist's view.
- 3) **Do not blindly insert nasogastric tube for lavage or feeding.** This may lead to mucosal injury and perforation of the mucosa that is already inflamed.
- 4) **Do not use neutralizing agents.** Agents with weak acid or base to reverse the effect of corrosive are not recommended. Reaction of acid and alkali leads to exothermic reaction which may cause added thermal burn to an already damaged tissue
- 5) **Do not give steroids empirically while referring.** Steroids have not shown consistent improvement in the outcome despite their postulated anti-inflammatory action. In fact in adults, steroids have been associated with higher mortality. In children, an exceptional situation to use steroids is endoscopic grade 2b injury. This decision can only be taken when an endoscopy has been performed. There is no evidence of improvement in other grades of injuries.
- 6) **Do not perform endoscopy beyond 72 hours of injury upto 21 days.** Since tissue is most friable between day 3 to 21 post-corrosive ingestion, diagnostic endoscopy is best avoided during this period where expertise and resources are limited. Questionnaire based surveys reveal that 90% prefer endoscopy between days 1-5, 70% agree that it should be deferred between days 6-21 and 50% agree that endoscopists should not venture beyond a charred area. After 3-4 weeks, fibrosis fully sets in making it conducive once again for endoscopic assessment and dilatation of the stricture.
- 7) **Do not prescribe medications in the form of tablets and capsules.** as they may get potentially stuck due to a narrow lumen. It is prudent to use syrups, dissolving preparations or intravenous drugs.

B) What I Should Do?

- 1) **Radiology:** Chest X-ray is usually performed in acute setting and may show mediastinal air in case of esophageal perforation. Computed tomography (CT) scan is a non-invasive test and can be used to ascertain severity of injury and need for surgery in complicated cases.
- 2) **Proton pump inhibitor (PPI):** Role of PPI in tertiary centers is doubtful. However empirical initiation of PPI at a primary center while referring the patients should not be harmful especially in a symptomatic child (dysphagia, odynophagia, hematemesis,

drooling, and chest pain). PPI may help by decreasing acid exposure to damaged tissue, decreasing further gastric acid reflux and prevention of stress ulcer formation. There is no consensus as to how long acid suppression should be administered. In a questionnaire based survey it was found that most physicians arbitrarily prefer 4 weeks of acid suppression.

- 3) **Anaesthetic gels:** For relief of oral burns
- 4) **Antibiotics:** Antibiotics are not routinely prescribed in asymptomatic patients with accidental corrosive ingestion as the injuries are likely to be mild. It is prudent to start antibiotics in all symptomatic patients. Since oral microbiota is a potential source of infection, injuries higher than endoscopic grade 2b may merit antibiotic therapy. A combination of gram positive (for oral microbiota) and gram negative cover (gastrointestinal microbiota) is optimal. Optimal duration of antibiotic is not defined but it is preferable to use for 1-2 weeks for an uncomplicated injury. In a suspected or proven perforation, it would be prudent to add an anaerobic cover. Additional situations meriting antibiotic

therapy are aspiration pneumonia, high grade fever and suspected bacteremia.

- 5) **Steroids:** Without EGD, the only indication for steroid is acute stridor and hypoxia due to laryngeal edema.
- 6) **EGD:** Urgent referral for endoscopic assessment must be performed within 72 hours of caustic ingestion. This is a golden window period for the patient for long term decisions and outcome.

Further Reading:

1. Bolia R, Sarma MS, Biradar V, Sathiyasekaran M, Srivastava A. Current practices in the management of corrosive ingestion in children: a questionnaire-based survey and recommendations. *Indian J Gastroenterol* 2021;40(3):316-325. Doi: 10.1007/s12664-021-01153-z
2. Urganci N, Usta M, Kalyoncu D, Demirel E. Corrosive substance ingestion in children. *Indian J Pediatr.* 2014;81:675-9. doi: 10.1007/s12098-013-1170-0.
3. Karaman İ, Koç O, Karaman A, Erdoğan D, Çavuşoğlu YH, Afşarlar ÇE, Yılmaz E, et al. Evaluation of 968 children with corrosive substance ingestion. *Indian J Crit Care Med.* 2015;19:714-8. doi: 10.4103/0972-5229.171377.