

AN UPDATE ON THE MANAGEMENT OF CAUSTIC ESOPHAGEAL INJURY

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REFERENCE

- Up to date 2015 Caustic esophageal injury in children

INTRODUCTION

- Caustic ingestion is seen most often in **young children** between 1-3 years of age, with **boys** accounting for 50 to 62 % of cases.
- Esophageal burns have been reported in 18 to 46 % of caustic ingestions occurring in children.

TYPES OF INGESTION

- Acids
- Alkaline agents



STAGES OF THE CAUSTIC INJURY

- **ACUTE : Over the 1st week**
 - Day 0: acute injury
 - 1 to 7 days: inflammation, vascular thrombosis
- **SUBACUTE : By 10 days** → formation of granulation tissue and weakening of the esophageal wall → not a good time for EGD
- **CHRONIC : By 3 weeks** → fibrosis and stricture formation (perforation is less likely)

CLINICAL MANIFESTATION

- **Gastrointestinal tract injury:**

Dysphagia, drooling, retrosternal or abdominal pain, hematemesis,...

- **Upper airway injury:**

Stridor, hoarseness, nasal flaring, retraction

- **Deeper injury** → esophageal perforation → mediastinitis, peritonitis, respiratory distress & shock.

CLINICAL MANIFESTATION

- The presence or absence of any of symptoms or signs of corrosive ingestion does **not** **predict** the presence/absence or ***severity*** of esophageal or gastric burns.
- The presence or absence of ***oral lesions*** also is **a poor predictor** of esophageal injury.

INITIAL EVALUATION

- **History and examination**
- **Imaging:**
 - Chest X-ray
 - Radiologic contrast study (UGI series)
 - Not reliable in predicting the acute injury or the risk for stricture formation → not valuable in the initial stage
 - Ideally, *after 1-3 weeks* of the significant injury.
 - CT scan or MRI

INITIAL MANAGEMENT

- **ABC**
- ***DO NOT DO 4 things:***
 1. Induce vomiting
 2. Using neutralizing agents
 3. Using dilution agents: milk, water
 4. Trying to insert NGT blindly
- **NGT:** In patients with extensive circumferential burns (Grade 2B or 3) under direct visualization during endoscopic procedure.
- **PPI** to prevent stress ulcers

GRADING FOR CAUSTIC ESOPHAGEAL BURN

Injury	Findings
Grade 0	Normal mucosa
Grade 1 (superficial)	Mucosal edema and hyperemia
Grade 2	Friability, hemorrhages, erosions, blisters, whitish membranes, and superficial ulcerations
Grade 2A	No deep focal or circumferential ulcers
Grade 2B	Deep focal or circumferential ulcers
Grade 3	Areas of multiple ulceration and areas of brown-black or greyish discoloration suggesting necrosis
Grade 3A	Small scattered areas of focal necrosis
Grade 3B	Extensive necrosis

MANAGEMENT

Depend on 2 important factors:

1. Certainty of ingestion
2. Presence of symptoms

Suspected ingestion

Ingestion: Questionable; or
Ingestion of household bleach
Symptoms: None
Oral burn: None

Ingestion: Definite
Symptoms: None to moderate
Oral burn: present or absent
Consider airway evaluation

Ingestion: Definite
Symptoms: Severe
Airway evaluation

Offer clear liquids;
Under observation
for 2 to 4 hours

Develops
symptoms

Endoscopy within
24 hours

Endoscopy under general
anesthesia within 24 hours

Discharge if remains
asymptomatic

Grade 0 or 1

Grade 2A or 2B

Grade 3

UGI series if
dysphagia develops

Feed as
tolerated

UGI series in 2-3
weeks, or if dysphagia
at any time
Dilation as needed

UGI series if
dysphagia develops

NG tube
Consider gastrostomy
Antibiotic
UGI series in 2-3
weeks, or if dysphagia
at any time
Dilation as needed

IS THERE A ROLE FOR STEROID ?

- *Animal studies & numerous small case series* suggested a benefit in patients with *first-or second-degree* esophageal burns in preventing esophageal scarring.
- A benefit of using corticosteroids in patients with third-degree burns has *not been demonstrated* (*inevitable stricture formation , may mask perforation*)

IS THERE A ROLE FOR STEROID ?

- A controlled trial of Anderson, esophageal strictures developed in 10 of the 31 children (32%) treated with corticosteroids and in 11 of the 29 controls (38%) (P not significant)
- Similar conclusions were reached by systematic reviews of patients with grade 2 or 3 burns
- The presentation of perforation can be masked by glucocorticoids

Anderson KD et al, N Engl J Med 1990; 323 (10): 637-640

Pelclová D et al, Toxicol Rev 2005; 24 (2):125-129

Fulton JA et al, Clin Toxicol (Phila) 2007; 45 (4):402-408

IS THERE A ROLE FOR STEROID ?

- **A randomized trial of methylprednisolone**
 - **Study group (n=42):** methylprednisolone (1 g/1 .73 m² for three days) + ceftriaxone and ranitidine
 - **Control group (n=41):** placebo + ceftriaxone and ranitidine
- Rates of stricture in study group were lower (14.3 versus 45 percent, as assessed by radiography, and 10.8 versus 30 percent as assessed by endoscopy, $p < 0,05$)
- **Additional research is needed to clarify the role of glucocorticoids**

MITOMYCIN C

- It is an inhibitor of fibroblast proliferation
- It has been topically used in children who have required repeated dilatations
- Reduced need for repeated dilation (3.85 versus 6.9 dilation sessions), and higher rates of complete resolution during the six-month follow-up period (80% versus 35% resolution), as compared with placebo

CONCLUSION

- The initial management is supportive care and close observation, preventing vomiting, choking, and aspiration.
- Corticoids is not recommended. (Grade 2C)
- EGD should be performed for most patients with a definite history of caustic ingestion, patients with symptoms or oral lesions (ideally within 24h)
- All patients with significant esophageal burns (grade 2A and higher) or persistent dysphagia, should be evaluated with UGI series 2 to 3 weeks.

Thank you for your attention

