The Role of Second-look Endoscopy in Severe Esophageal Caustic Injury

Le Puo-Hsien[1,2], **Seak Chen-June**[3,4], **Chiu Cheng-Tang**[1,4], **Chen Tsung-Hsing**[1,4], **Kang Shih-Ching**[5] **and Cheng Hao-Tsai**[1,4,6*]

[1]*Department of Gastroenterology and Hepatology, Linkou Chang Gung Memorial Hospital, Taoyuan, Taiwan*

[2]*Liver Research Center, Linkou Chang Gung Memorial Hospital, Taoyuan, Taiwan*

[3]*Department of Emergency Medicine, Linkou Chang Gung Memorial Hospital, Taoyuan, Taiwan*

[4]*Chang Gung University, College of Medicine, Taoyuan, Taiwan*

[5]*Department of Trauma and Emergency Surgery, Linkou Chang Gung Memorial Hospital, Taoyuan, Taiwan*

[6]*Graduate Institute of Clinical Medicine, College of Medicine, Chang Gung University, Taoyuan, Taiwan*

***Corresponding Author:** & ZF \ 6 X U J H U& ‘ m@ Đ

Materials and Methods

Under the approval of the Chang Gung Medical Foundation Institutional Review Board (104-2662B), we retrospectively collected severe caustic ingestion (Zagar grade 2, 3a, 3b) adults from electronic endoscopic report system in Linkou Chang Gung Memorial Hospital during 2011/01-2014/11. The patients who had unknown corrosive properties or no first endoscopy result within 24 hours were excluded. The rest patients were dived into once endoscopic group (only once EGD within first 24 hours) and second-look endoscopy group (first EGD within 24 hours of caustic ingestion and second EGD during 6^{th}-14^{th} days). The second-look endoscopy was performed when patients had improved clinical condition, including less pain and stable vital sign, and we considered to try oral intake to confirm the endoscopic grade in subacute stage. If the Zagar's score of second-look endoscopy was the same or improved, patients would go ahead to starting intake. On the other head, surgical evaluation and prolonged fasting were indicated. In once endoscopic group, there was much higher proportion of the patients with Zagar grade 3a, 3b, and they could not receive send-look endoscopy due to worse clinical condition in subacute stage. Therefore, we matched these two group patients with the same Zagar grading, cause of caustic injury (suicide or accident), corrosive properties and injury grading in maximum case number, and then selected by Excel RAND function if we got several candidates.

The initial managements, including stabilizing vital sign, intravenous fuid and nutrition support, intensive care unit admission, fasting, serial chest and abdominal flm follow-up were the proved in all patients. The indications for emergency surgery were clinical signs or image evidence of perforation, mediastinitis, peritonitis or highly suspected impending perforation by clinicians or endoscopic fnding. Receiving second-look endoscopy or not and the timing were decided by clinical physicians, patients' agreements, clinical symptoms and signs in subacute stage. All the endoscopic exams were performed with room air by the same experienced endoscopic doctor.

We analyzed the hospital stay duration, systemic complications (aspiration pneumonia, respiratory failure, disseminated intravascular coagulation (DIC), acute hepatitis, acute kidney injury), gastrointestinal (GI) complications (perforation, fstula formation, bleeding, stricture) and the need of further treatment (dilatation, esophagectomy) to evaluate the safety and benefts of second-look endoscopy in these cases.

We used Microsof Excel 2013 RAND function to select patients afer matched the same cause of caustic injury, corrosive properties and endoscopic severity grading. The χ^2 test was used for group comparisons involving binary data and independent samples. Numerical data were evaluated by Student ttest. The results were considered to indicate a statistically signifcant diference when $P<0.05$. Statistical calculations were performed using SPSS, 18.0 sofware (SPSS, Inc., Chicago, IL, USA).

Results

In this study, we fnally enrolled 52 severe esophageal caustic injury (Zagar grade 2b, 3a, 3b). In these patients, suicide was the major cause of caustic ingestion (84.62%), and acid ingestion was more than alkali ingestion (57.69%, 42.31%). The average age was 50.48 ± 19.08 years old, and men were predominant (51.92%, 48.08%). The distribution of endoscopic severity were grade 2b (11.54%), grade 3a (23.08%) and grade 3b (65.38%). There were 26 patients in each group.

As we showed in Table 1, the cause of caustic injury (suicide/accident), corrosive property and endoscopic severity were matched equally in both groups, but the age of second-look endoscopy group is older than once endoscopy group (55.81 ± 17.45 y/o, 45.15 ± 19.47 y/o, $P=0.043$). All patients in the study had frst time endoscopic exam within 24 hours, and the average timing of second-look endoscopy was 10.23 ± 3.17 days afer caustic ingestion in second-look endoscopy group.

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Diseases	Overall	Once endoscopy(n=26)	Second-look endoscopy (n=26)	P-value
GI complication	34(65.38%)	20(76.92%)	14(53.85%)	0.08
Bleeding				

Table 3: Demographic features and outcome analysis in alkali and acid ingestion groups.

As far as corrosive property was concerned, acid ingestion grouphad higher suicide rate (95.35%, 72.72%, P=0.012) in Table 3. It seemsto have higher CI and

(detergent or insecticides) at ... caustic agents ... intent, ... were also suicide ... adults ... injury ... mostcaustic ... found ... we ... study ... In the ... [12,13]. ... malignancy ... and ... tion

significance.

DiscussionUnlike caustic ingestion in children, adults usually ingest strongcorrosives with suicidal intent and lead to severe, life-threateninginjuries wit

fistula

Therefore,

this kind of injury is heavy burn to family and health care system [16].How to improve the survival rate, shorten the hospital stay anddecrease long-term co

There

Stricture

improve other clinical outcomes. Because of limited case number and no comparison of twice endoscopic results, we needed prospective, randomized and larger sample size studies to support the fnding.

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