

Full Length Research Paper

# Demographic pattern and severity of caustic injury in 300 caustic ingestion patients

Esmail Haji Nasrollah, Hassan Peyvandi, Ali Khoshkar, Hadi Mirhashemi, Mehdi Ahmadi and Ghazal Hajinasrollah

Shahid Behshti University Loghman Medical Center

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**Objective:** objective of this study was to report frequency and ratio of caustic substance ingestion cases and their demographic data that admitted in Loghman Medical Center, as a referral center in toxicological problems

**Cases and methods:** From 2007 to 2010, 300 cases of caustic ingestion were admitted. One hundred and eighty nine men and 109 women ingested caustic ingestion. All demographic data, past medical and past psychiatric history were recorded. gastroesopagheal endoscopy underwent. Caustic injury was defined based on Zargar grading system. Data were analyzed with SPSS 18 software, accordingly.

**Results:** Three hundred cases with corrosive substance ingestion admitted in Loghman Medical Center during 2007 to 2010. 154 patients (51.3%) were single, 83 cases (27.6%) were married, 34 cases (11.2%) were divorced and 39 cases (13%) were widowed.

Ingestion was associated with suicidal intent in 217cases (72.3%). 134 cases(44.6%) had a previous history of psychiatric 98cases(32.6%) had history of substance abuse. mean time interval was (8.45±2.11 hours).Amount of caustic substance was between 1 cup (75cc) and 12 cup (900cc). The caustic materials for injuries were in 97cases (32.4%) chemical depilatory agent (Vajebi), 128 cases (42.6%) acids and 75 cases (25%) liquid lye. Based on Zargar system 128cases did not have esophageal and gastric burn, 116 cases had grade I injury, 38cases had grade II injury and 14cases had grade III injury.

**Conclusion:**Caustic ingestion is a suicidal event in Middle East and Asia. Singles, men and cases with psychiatric problems are more prone to suicide, and thus to caustic ingestion.

**Keywords:** Caustic ingestion, demographic pattern, caustic injury, severity

## INTRODUCTION

In the developed and developing countries, corrosive injury to the gastrointestinal system as a consequence of either accidental ingestion or as a result of self-harm has become less of a common phenomenon (1, 2).

This could partly be attributed to the tighter legislation imposed by the government on detergents and other corrosive products and general public awareness (1, 2).

Potentially catastrophic presentation and lifelong complications resulting from caustic ingestion make it one of the most challenging clinical situations in gastroenterology (3, 4, and 5).

In western countries Caustic material ingestion is most

frequently encountered in children or adults who accidentally swallowed caustic materials(1,2), but in Iran and other middle east countries, because of cultural aspects, this situation is common in adults who ingested caustic materials for suicidal purposes (1,2,3,4,5).

Alkaline caustics and acids are the commonest chemicals implicated in caustic burns (6, 7). Burns from ingestion of such agents may include the oral, pharynx, larynx, esophagus and stomach (8, 9). Destruction of tissues or of these organs may lead to complications, of which respiratory compromise, esophageal and gastric perforation, septicemia, or even death might occur (9, 10, 11). The objective of this study was to report frequency and ratio of caustic substance ingestion cases and their demographic data that admitted in Loghman Medical Center, as a referral center in toxicological problems.

**Table1.** Complaints and symptoms of patients

	<b>Symptom</b>	<b>Percent</b>
Sore throat	285	95
Retrosternal pain	216	72
Heart burn	198	66
Nausea	179	59.6
Vomiting	98	32.6
Hematemesis or slough vomiting	12	4
Dyspnea	27	9
Odinophagia	235	78.3
Drooling	31	10.3

## CASES AND METHODS

From 2007 to 2010, three hundred cases of caustic ingestion were admitted in our center. All demographic data, past medical and past psychiatric history were recorded. All cases were interviewed by an expert psychiatrist based on DSM IV diagnosis.

To determine the amount of caustic substances ingested, patients or witnesses were asked to compare the amount ingested to the amount of water in a cup. In patients with strong signs of peritonitis, surgery was done without esophagogastodeodenoscopy(EGD). In remaining cases gastroesopagheal endoscopy underwent. Caustic injury was defined based on Zargar grading system (12, 13, and 14).

Data were analyzed with SPSS 18 software, accordingly. All P value under 0.05 assumed significant.

## RESULTS

Three hundred cases with corrosive substance ingestion admitted in Loghman Medical Center during 2007 to 2010. One hundred and eighty nine men and 109 women ingested caustic substances (sex ratio 1.7:1), respectively. Patients aged from 18 to 79 years (mean,  $33.23 \pm 9.21$  years). Their clinical and pathological data were reviewed, and collected from the medical records of patients. 154 patients (51.3%) were single, 83 cases (27.6%) were married, 34 cases (11.2%) were divorced and 39 cases (13%) were widowed.

Ingestion was associated with suicidal intent in 217cases (72.3%) of cases and accidental in 83cases (27.7%) of cases. 33cases (11%) had history of caustic ingestion.

134 cases (44.6%) had a previous history of psychiatric problems that 89 cases had active psychiatric problems; including 53 cases of major depression, 25cases of bipolar disorder, 7cases of personality disorders and 4 cases of schizophrenia. Intentional caustic ingestion was significantly higher in patients with history of psychiatric problems.

98cases (32.6%) had history of substance abuse. Intentional or accidental ingestion of caustic agent was not significantly different in substance abusers.

Mean time interval between caustic ingestion and admit in emergency ward was ( $8.45 \pm 2.11$  hours). Amount of caustic substance was between 1 cup (75cc) and 12 cup (900cc). The caustic materials for injuries were in 97cases (32.4%) chemical depilatory agent (Vajebi), 128 cases (42.6%) acids and 75 cases (25%) liquid lye.

The most frequent chief complaint was sore throat (285 cases). Other patient complaints are listed in table 1. Hematemesis or black material vomiting (slough vomiting) was occurred in 12 cases.

A significant sign in clinical evaluation was included erythema and soft tissue swelling of oropharynx in 256cases, necrosis and exudates of oropharynx in 33cases; hoarseness was occurred in 22 cases, epigastric tenderness in 237cases, generalized abdominal involuntary guarding and generalized abdominal rebound tenderness was occurred in 8cases(table2).

Chest and lateral neck roentgenograms obtained in all cases that were normal. In laboratory tests 18 cases had significant metabolic acidemia ( $PH < 7.25$ ). 134cases (44.6%) had leukocytosis( $WBC > 10000$ ).

292 cases underwent esophagogastodeodenoscopy(EGD). Caustic injury defined as in Zargar scoring system. Based on Zargar system 244 cases (81.3%) had grade I injury, 38cases had grade II injury and 14cases had grade III injury.

## DISCUSSION

As a referral center in topological problems, Loghman Medical Center is a leading center in caustic ingestion cases. Caustic ingestion admission rate in general surgery ward of this center is at least 10cases per month (3). This study is a descriptive study on demographic and severity of chemical burn on cases admitted in Loghman medical center.

Male/female ratio in our study was 1.7:1, while caustic ingestion is more frequent in men and this ratio is higher in previous studies (1, 15, 19)Mean age in this study

**Table2.** clinical signs of patients

	<b>Symptom</b>	<b>Percent</b>
erythema and soft tissue swelling of oropharynx	256	85.3
necrosis and exudates of oropharynx	33	11
hoarseness	22	7.3
epigastric tenderness	237	79
involuntary guarding and generalized abdominal rebound tenderness	8	2.6

**Table3.** Comparison of EGD results based on Zargar grade in current study and previous studies

Grade	Current study	Cheng et al	Chang et al
I	244(81.3%)	31(11.3%)	57(14.7%)
II	38(12.6%)	118(43.2%)	153(39.3%)
III	14(4.6%)	121(44.3%)	165(42.4%)

about 33 years, while in Chang et al and Cheng et al studies this measure was 43 years and same results in other studies(1,15).

About 28% of cases were married and 72% were single, widowed or divorced. In our study marriage is a factor in caustic ingestion.

Over 72% of cases were ingested caustic agent intentionally; this measure is comparable with Chang et al, Han et al and Cheng et al study (1, 15, and 17).

The major psychiatric co morbidity in our study was major depression; as in Chang et al study(15). Intentional caustic ingestion is higher in patients with psychiatric problems.

Most frequent caustic material ingested by patients in our study was acid. The second frequent substance was a chemical depilatory agent known as Vajebi. Vajebi is a mild corrosive agent and a traditional depilatory agent in Iran and some other Middle Eastern countries.

Mean time interval between ingestion and arrival in emergency ward was about 8 hours and all cases underwent esophagogastroduodenoscopy within 24hours of caustic ingestion.

172 cases had some degrees of caustic injury. 52 cases (17.3%) had high grade caustic injury (grade II or III), while in Chang study this measure was about 71%, and 62% in Cheng et al study (table 3). High frequency of low grade caustic injury in our study is because of enrollment of cases with Vajebi ingestion. Acid ingestion is dependent to high grade injury that is comparable with previous studies (1, 2, 14, 15, and 17)).

## CONCLUSION

Caustic ingestion in adults can be a suicidal event in Iran. Singles, men and cases with psychiatric problems are more prone to suicide, and thus to caustic ingestion.

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