Corrosive Injuries Admitted to Hospitals of Rasht city during 2002-2009

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Received: 01.06.2013 *Accepted: 15.06.2013*

ABSTRACT

Background: Caustics produce one of the most serious complications of poisonings. This research was aimed to study demographical, clinical and endoscopic findings in patients with corrosive injury.

Methods: In a retrospective survey, all records of the patients who had been admitted to Razi and 17th Shahrivar hospital in Rasht city due to the ingestion of caustic agents during 2002-2009 and endoscopy had been performed for them in the first 24 hours after ingestion were studied. The information was analyzed by descriptive method using SPSS 16 software.

Results: Among 258 patients in Razi Hospital, 174 (67.4%) were female with mean age of 29.33 years old. 127 patients (61.1%) had intentional ingestion. 208 patients were finally studied. Among them, 175 patients were hospitalized for 2 days (average 1.73 days). Among 45 patients of 17th Shahrivar hospital, 24 (53.3%) were female. All of them had accidental ingestion. The most frequent site of injury in adults was esophagus (37.2%) and in pediatric population was the mouth (66.6%). Of all pediatric patients, one case had grade IIb endoscopic injury. Among cases who underwent endoscopy (in adults),20.8%, 16.7%, 41.6%, 16.7%,4.2% had grade zero, I, IIa, IIb and III injury, respectively .In all cases, bleaches were the most frequent consumed material.

Conclusion: In both studied groups, female patients were more affected by corrosive agents and in adults, intentional ingestion was approximately 1.5 times more frequent than the accidental cases; while all of pediatric patients had accidental poisoning. Most of the lesions had been received only medical treatment without any surgical interventions.

Keywords: Caustics, Corrosive, Poisoning, Rasht.

IJT 2013; 921-925

INTRODUCTION

Ingesting corrosive materials is considered as a worldwide health problem particularly in children and adult population mostly in suicide [1]. The mortality rate following corrosive ingestion is reported to be around 20 percent in the United States. Most of the materials causing these injuries are ingested accidentally and more than half of the victims are children.[1] Despite all the educational programs, this rate still has a rising pattern in many countries [1,2].

The chemical nature of the agents is acidic or basic. The difference in type of injury is closely related to the PH of the agent [3.4]. In other words, basic agents cause liquefaction necrosis; while acidic materials usually lead to cagulative necrosis in the exposed tissues [5]. Stomach, esophagus, oral cavity, lips and pharynx are most frequent organs which might be severely injured. Siallorrhea, nausea, vomiting, dysphagia, odinophagia, epigastric or chest pain are also considered as the most common clinical manifestations among patients [6-9].

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Acute injury due corrosive material ingestion can cause severe chemical damages to the upper parts of gastrointestinal tract [5]. The severity and possible complication of injuries is also directly related to factors like the type, morphological shape, quality and content of the ingested materials. Pathological classification of these injuries is the same as burn injuries. Statistical analysis of the epidemiological variables of the patients can strongly improve the final results of treatments or even mortality rates among future patients [10, 11]. Thus, this study is aimed to define early and late complications of corrosive material ingestion and reporting the endoscopic findings in patients.

MATERIALS AND METHODS

In this descriptive retrograde research all patients with corrosive ingestion who were admitted to Razi and 17th Shahrivar hospital of Rasht city, capital of Guilan province, Iran during 2002 to 2009 were enrolled in the study. The ethical committee of the Guilan University of Medical Sciences approved the study.

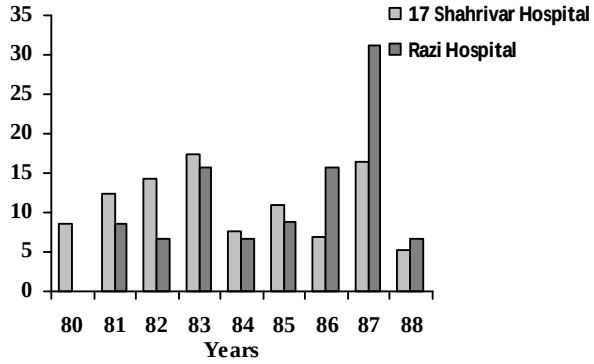

Figure1. Percentile distribution of poisoned cases based on the year of visit.

The collected parameters included age, gender, place of poisoning, date of admission, duration of admission, type of corrosive, the possible reason of poisoning, site of the injury, clinical manifestations, endoscopic findings (grade1: edema, erythema; Grade 2a: hemorrhage, erosion, bulla, ulcer and exudates; Grade 2b: spiral ulcers; Grade 3: multiple deep brownish black or grey ulcers, necrosis; Grade 4: perforation) and the treatments.

50 patients (19.4%) were excluded from the research due to lack of information. The data was then analyzed by descriptive method using SPSS version 16 software.

RESULTS

The final results of this research were divided into adult and children group as follows:

Adults Group

The mean age of the patients was 29.33±13.44 years (range 13-75). 175 patients had 2 days or less hospital admission. Mean duration of admission was 1.73±5.24 days. The other demographic data are shown in tables 1-4.

Table1. Frequency distribution of patients poisoned with corrosive material ingestion based on age.

(Percent)N	Age(yrs)	Hospital
(9/32)85	20-13	Razi
(1/3)88	30-21	
(14) 36	40-31	
(1/10)26	50-41	
(9/8)23	51≥	
(100) 258	N	
(6/6)3	1≥	17th Shahrivar
(8/37)17	2-1	
(4/22)10	3- 2	
(8/17)8	4-3	
(4/15)7	9- 4	
(10)45	N	

Table2. Demographic characteristics of cases.

N	17th Shahrivar	Razi	Hospital / Variable	
(3/65)198	(3/53)24	(4/67)174	Female	Gender
(7/34)105	(7/46)21	(6/32)84	Male	
(19/50)127	-	(1/61)127	intentional	Cause
(8/49)126	(100) 45	(9/38)81	accidental	
(03/64)162	(8/75)34	(5/61)128	Rasht	Location of Accommdation
(96/39)91	(2/24) 11	(5/38)80	Others	
(48/26) 67	(1/31) 14	(4/25)53	Spring	Season
(32/23)59	(20)9	(1/24)50	Summer	
(11/24)61	(9/28)13	(1/23)48	Autumn	
(08/26)66	(20) 9	(4/27)57	Winter	

The most common substance was bleaches (in 178 cases), followed by Washing soda (25 cases 3).

Table 3. Frequency distribution of cases based on the type of ingested material.

N	17th Shahrivar	Razi	Toxic agent	Type
(24/9)28	(6/7)3	(9/7)25	Washing soda	Acid
(1)3	(2/2)1	(8/0)2	Battery liquid	
(2)6	0	(2/3)6	chloridric acid	
(0/33)1	0	(4/0)1	olive cleaner	
(1/65)5	0	(1/93)5	Essence Limo	
(73/92)224	(3/82)37	(5/72)187	bleaches	Base
(2/31)7	(2/2)1	(2/3)6	August Clare	
(0/33)1	(2/2)1	0	Lime	
(0/33)1	(2/2)1	0	Chlorine powder	
(3/96)12	0	(4/6)12	Cleaning liquid	
(0/66)2	0	(0/8)2	Glass cleaner	
(1/65)5	0	(1/9)5	Detergent	
(0/33)1	0	(0/4)1	Shamp0o	
(1)3	0	(1/16)3	cleaning drug	Other
(1)3	(2/2)1	(0/8)2	Oxidant	
(0/33)1	0	(0/4)1	Brake	
(100)303	(100)45	(100)258	N	

157 patients (75.5%) showed clinical manifestations. The most frequent symptoms were vomiting (74 cases), nausea (28 cases), abdominal pain (25 cases), heart burn (20 cases), tachypnea (20 cases), esophageal ulceration (16 cases), and oral cavity ulceration (13 cases).

Table 4. Clinical manifestations of studied cases.

N	17 Shahrivar	Razi	Hospital / Variable	
5	-	5	0	
4	-	4	I	
10	-	10	IIa	**Endoscopy**
5	1	4	IIb	**N=25**
1	-	1	III	

The medical interventions included H2-blockers (84 cases), metoclopramide (57 cases), proton pump inhibitors (37 cases), milk (34 cases), hydrocortisone (27 cases), sucralfate (17 cases), antibiotic (3 cases), dexamethasone (3 cases), bicarbonate (2 cases).only one patient underwent upper GI endoscopy.

Children Group

The mean age of patients was 2.96±1.9 years. 44 patients (97.8%) had 2 days or less hospital admission. Mean duration of admission was 1.11± 0.61 days. Demographic data is shown in tables 1-4. All the admitted patients had been poisoned accidentally.

The most common substance was bleaches (37 cases) followed by Washing soda (3 cases, table 4). The most frequent symptoms were vomiting (31 cases), tachypnea (9 cases), cough (5 cases) and heartburn (3 cases).

The medical interventions included prescribing H2-blockers (22 cases), and milk (13 cases).

DISCUSSION

The most common poisoning agent was the bleaching liquid (whitex) in both studied groups. According to the results of this study it can be revealed that basic content bleaching liquids were also the most common agent among children and female adults. This could be due to easy accessibility of these materials for this group of population. Furthermore the bottles containing them usually have no precaution signs on them and the materials themselves are colourless. According to Hawand et al the clinical manifestation of patients from 2000-2003 in Thailand the poisoning agents were 65.8% strongly acidic and 4.1% strongly basic (Total number of 73 pateints: 55 women and 18 men with the mean age of 22 years old). The most common reason of poisoning was suicide. Nausea, vomiting, cialorrhea and abdominal tenderness were the most frequent manifestations respectively. Oral cavity and pharyngeal injuries were significantly related to ingesting corrosive agents [4].

In an article by Tuda et al [12], 64.2% of patients were male and 35.8%female which

is the opposite of results of our study and Sattar et al (56.8% women and 43.2% men).[13].

The gender ratio in Binali et al was 53.5% male and 46.5% female which is also opposite of ours.[14]The possible reason could be curiosity of children or accidental abuse .

In a twelve ear study of oropharyngioesophageal injuries of patients in Ghaem hospital of Mashhad by Naghibzade et al [5], 37 cases were admitted to the hospital from 1359-1371. Most of the children less than 7 years old and the injuries were usually due to basic content materials and frequently in esophagous. Among these patient, 13 cases were totally cured only with medical treatment and 6 ones needed recurrent dialation. In another study by Mehrgan et al in Loghman hospital of Tehran, children less than 16 years old who were admitted with the history of corrosive material ingestions from 1381-83 were evaluated. Among 72 patients, 41 children were poisoned with acidic agents and 31 with basic content materials.74.7% of all cases ingested the agents accidentally. The most frequent clinical manifestation of them was vomiting, oral cavity ulcers, agitation, ciallorrhea, abdominal pain and dysphagia. 68% of patients had normal appearing Endoscopy and 32% had grade2a or higher grade injuries.

Based on Endoscopy results of our study 20.8%, 16.6%, 41.6%16.7% and 4.2% of patients had normal, grade 1,1a,2a,2b,3 burns respectively. These findings are similar to Sattar et al's. Only one child underwent endoscopy (G2a) because most ingested materials were in small amounts. Rafiee and Shoaraan had other results showing G2(62%)and G1(38%).

Sattar Et al evaluated the demographic and endoscopic results of 37 patients admitted from 2000-2003(21 female and 16 male) in Turkey. The mean age of cases was 30.9±14.7 years old. Hypoclorite Sodium was the poisoning agent in 24 cases while 13 patients were poisoned by Hydrochloric acid.

All the patients underwent endoscopy and the results were as follows: G0(8patients:21.6%), G1(17patients:45.9%), G2a(5patients:13.5%), andG2a(7patients:18.9%). These findings reveal that early endoscopic interventions along with defining the exact extension of injuries and proper control could help the patients in all aspects of treatment procedure.

High acid containing materials like washing soda were the second important and common agents in poisoning which mostly caused G2a and G2b injuries thus doing Endoscopy in these patients seems logical.

In pediatric group, oral cavity injuries were responsible in 66.6% of patients and regarding the fact that all poisoning cases happened accidentally the location seems to be matching. Most children react quickly to these agent right after ingestion them thus the injuries are superfacial and not much important.84.1% of patients were hospitalized for 3 days and 15.9% more than 3 days. Based on the Endoscopic findings and clinical manifestations of patients it reveals that prognosis of treatment is variable in different patients.

Also this article shows that H2 blockers could minimize the injuries to stomach and duodenum while antiemetics are more useful for esophageal and oral cavity injuries.

CONCLUSION

In both studied groups, female patients are more affected by corrosive agents and in adults, intentional ingestion was approximately 1.5 times more than the accidental cases while all of pediatric patients had accidental poisoning. Most of the lesions required medical treatment without any surgical interventions and Endoscopy is beneficial for those with obvious manifestations and improves the treatment.

ACKNOWLEDGEMENTS

We would like to thank all hospital staff who assisted us in this study.

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