

Outcome of Patients with Acute Poisoning Treated with Gastric Lavage

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Abstract

Background: Acute poisoning is a medical emergency and preventable cause of morbidity and Mortality. Gastric lavage (GL) is one of the most commonly used decontamination method for poisoning in developing countries despite lack of supporting evidence. This study was designed to evaluate the outcome of patients with acute poisoning treated with GL in regards to timing of the procedure. *Methods:* In this study, GL was planned to be administered to patients with acute poisoning after initial stabilization. Early GL was defined as GL given within one hour of poison exposure and late GL was referred to performing the procedure after one hour till 12 hours of ingestion. *Results:* During the study period, 80 patients with acute poisoning received GL comprising of 30 who received early, 50 who received late. 23 patients (29%) died. Mortality, respiratory failure and duration of ICU stay was more in late GL treated patients compared to early GL patients however this was not stastically significant. *Conclusion:* Since in our study timing of gastric lavage did not create a meaningful difference in the overall mortality, respiratory failure and duration of ICU stay, it would be better that gastric lavage be given to all patients irrespective of early or late arrival without any clinical ambiguity.

Keywords: Gastric Lavage; Respiratory Failure.

Introduction

Deliberate self-poisoning has reached epidemic proportions in parts of the developing world where highly toxic poisons and sparse medical facilities ensure a high fatality rate. The offending agent and the associated morbidity and mortality vary from place to place. Pesticides are the major problem- the WHO estimates that they cause more than 250,000 deaths worldwide each year [1]. Most deaths are due to organophosphorusinsecticides [2].

Supportive care, along with antidote when available, continues to be the cornerstone of therapy in poisoned patients. Recent Guidelines for management of poisoning indicate that gastric lavage should be performed only if two criteria are met: within one hour of poison ingestion and substantial ingested amount [3]. But the evidence on which these guidelines

are based is from drug overdoses in developed countries and may be irrelevant to OP poisoning in Asia.

Removal of the poison from stomach by gastric lavage (GL) seems to be a practical approach for decontamination. Although high quality evidence showing the benefit of GL in acute poisoning is lacking, it is one of the most commonly used decontamination method for poisoning in developing countries. Data from western countries show that many clinicians are not using or remained unaware of the benefits of GL [8]. However, we should note that the evidence on which the European and American guidelines are based largely involves overdoses of relatively safe pharmaceutical agents in Western countries. It is not clear how relevant such studies are to rural Asia where OP pesticides are often ingested and the case fatality some 20-50 times higher than the West [9]. Activated charcoal, forced

emesis, ipecac, cathartics are the other methods of gut decontamination used in different parts of the world to varying extents.

Moreover, absorption of poison depends on its chemical nature and may be affected by presence of other substances in stomach. While removal of poison from gut appears to be reasonable to prevent further absorption of poison, especially during first hours of exposure, the benefit of GL is limited by its complications. Aspiration pneumonia can occur, especially in patients with depressed sensorium and unprotected airway. Worsening of hypoxia, laryngospasm, cardiac arrest, perforation of oesophagus, electrolyte imbalance and sheer exhaustion are other possible complications [4].

Our institution policy is to give GL to all patients with insecticide poisoning within 12 hours of ingestion of poison on arrival at emergency room, once the general condition is stabilized. In this observational study, we aimed to evaluate the outcome of patients with acute poisoning treated with GL in regards to the timing of the procedure.

Materials and Methods

Study Design and Patients

In this prospective observational cohort study, 80 patients with acute poisoning admitted to, JJM Medical College, Davanagere, Karnataka, India, between June 2017 and August 2017 were enrolled.

Inclusion and Exclusion Criteria

Inclusion Criteria

The study aims to recruit all patients admitted to the hospitals with a history of acute poisoning.

Exclusion Criteria

- Age under 18 years
- Acid / alkali ingestion

Treatment Protocol

All cases were initially admitted to the emergency unit. After baseline evaluation and stabilization, they were transferred to the MICU. GL was given to patients after stabilizing the vital signs. Patients will be placed in left lateral position and a naso-gastric

tube placed through a nostril. Once in the stomach, its position will be confirmed by aspirating gastric content and auscultating over the stomach. The gastric content will be sucked out first and then 300 ml of water at room temperature pushed in. The water will then be aspirated Completely and another 300 ml administered. The above procedures will be repeated until the aspirated water is without smell and clear.

Outcome

- Primary outcome was measured by hospital mortality.
- Secondary outcome was measured by
- Incidence of respiratory failure (RF) and mechanical ventilation
- Duration of hospital stay.

Results

General Findings

- Over the period of three months, 80 patients (65% men; 35% female) with mean age of 31.50+9.89 years in early GL and 32.38+14.73 years in late GL were admitted with acute poisoning.
- Greater number of patients (64 patients, 80%) was primary attendees to our hospital and rest (20%) were referred patients.
- Early gastric lavage was received by 30 patients (37%) and 50 patients (63%) received late gastric lavage (Chart 1).
- Most common poisoning was due to Organophosphorous poisoning (56 patients, 70%).

Morbidity & Mortality

- About 59% (49 patients) of the patients developed respiratory failure and was put on mechanical ventilation. Of which 47% (14 out of 30) received early GL while 66% (33 out of 50) received late GL. (Chart 2)
- Mean duration of hospital stay in early GL is 10 days (4.50-15 days) and in late GL is 9 days (4-15 days) (Chart 3).
- 23 died during the study period (mortality rate = 29%).
- Mortality among early GL was 23% (7 out of 30) while in late GL was 32% (16 out of 50) (Chart 4).

Table 1: Analysis of outcome according to the timing of gastric lavage

	Timing of gastric lavage		RR* (95% Confidence Interval)		P value
	Early gastric lavage	Late gastric lavage	Early gastric lavage	Late gastric lavage	
Age (Years) Mean ± SD)	(31.50±9.89)	(32.38±14.73)			0.75
Mechanical Ventilation	14 (46.67)	33 (66.00)	0.614 (0.350-1.078)	1.36(0.93 - 1.99)	0.089
No of Days in ICU Stay (Hours); Median (IQR)	10 (15.0-4.50)	9 (15.00-4.00)			0.944
Mortality; n (%)	7 (23.33)	16 (32.00)	1.326 (0.662-2.653)	0.86(0.61 - 1.21)	0.407

* Relative risk

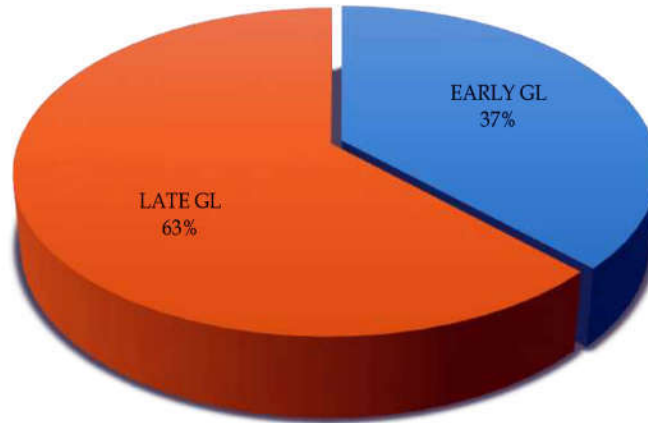


Chart 1: Early vs late GL

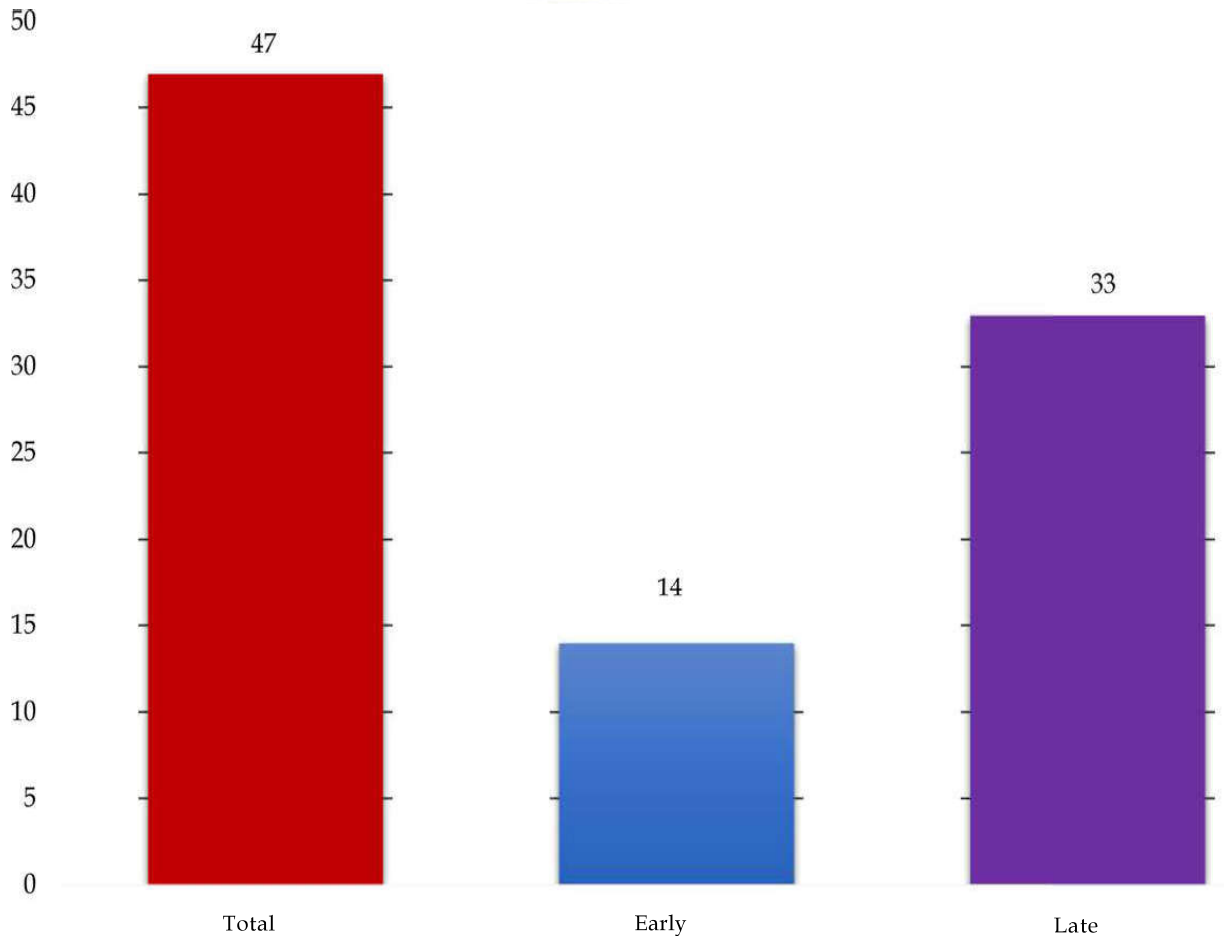


Chart 2: Mechanical Ventilation

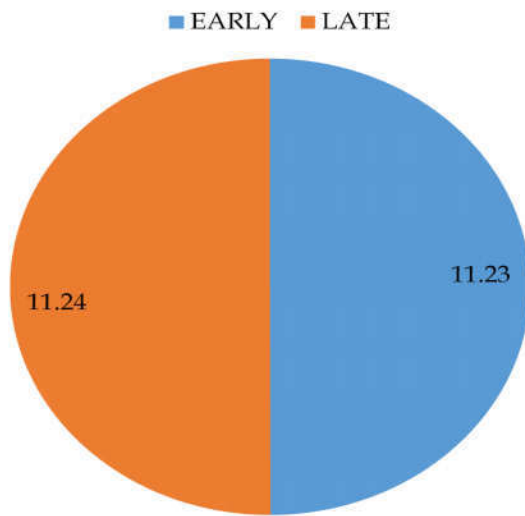


Chart 3: Duration of hospital stay-Mean no of days

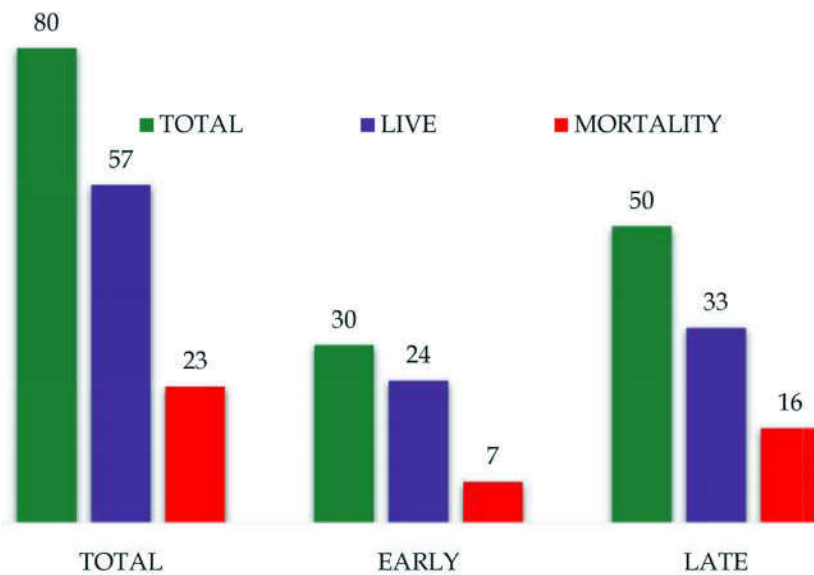


Chart 4: Mortality

Analyses of patient's outcomes according to timing of the GL are presented in Table 1. As can be seen, there was no significant difference in mean age between patients who received early and late GL. Regarding the outcomes, development of respiratory failure, duration of hospital stay and mortality rate were not stastically significantly different between patients receiving early and late GL.

Discussion

Although benefit of GL in acute poisoning is lacking adequate evidence, the importance of this minimally-invasive treatment should not be

neglected, especially in resource-limited medical settings [4]. In this study, we were able to show some benefits of GL in acute poisoning.

Moreover, early GL was shown to reduce the risk for development of Respiratory failure compared to late GL though its impact was not stastically significant. Mortality was significantly associated with respiratory failure in our series. Respiratory failure has been recognized as the main cause of death in cholinergic insecticide poisoning.

In this study, mean time interval between poisoning and GL was similar in both survivors and non-survivors. We noted that early GL as compared to late GL may not have any impact on the overall mortality or morbidities similar to previous observations [5, 6].

Since the absorption of organophosphates is rapid, GL is claimed to be most effective within 30 minutes of ingestion, although GL done within few hours may also be beneficial [7].

Our study also suggests that for the poisoned patients, other emergency measures should be given priority over gut decontamination in early hours post-exposure.

In this regard maintaining the ABC along with treatment with atropine should be done before attempting GL in patients with decreased consciousness as it can cause more harm than benefit in such situations.

In this present study we could not quantify the ingested poison or retrieved poison in the lavage fluid. The concentration of poison in blood before and after GL was not quantified.

Conclusion

Since in our study timing of gastric lavage did not create a meaningful difference in the overall mortality, respiratory failure and duration of ICU stay, it would be better that gastric lavage be given to all patients irrespective of early or late arrival without any clinical ambiguity.

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