

Poisonings in Patients of Medical Coma and their Outcome at Mayo Hospital, Lahore

T WASEEM M A NADEEM K IRFAN K A I WAHEED.

Department of Medicine, King Edward Medical College/Mayo Hospital, Lahore
Correspondence to Dr. Muhammad Arif Nadeem, Assistant Professor Medicine

Accidental, suicidal or homicidal ingestion of various substances is quite common in patients who often present as "Coma of unknown origin." The pattern of drug used in our society differs from the West. The knowledge of more popular substances in local community can be helpful in early diagnosis and management of these patients. In an ICU setup we studied the etiological distribution of coma resulting from poisoning and its outcome. Poisoning was the most frequently encountered cause (70 cases) comprising 19.18% of all cases of coma. There were a total of 218 patients with metabolic causes of coma, and out of these poisonings contributed the largest chunk (making up 32.11% of metabolic comas). Taken as a whole, poisoning has a relatively favourable outcome (25.71% mortality). The leading cause of poisoning encountered in our study was benzodiazepine poisoning i.e. 20 patients (28.57%) and all recovered. The second largest group was wheat preservative poisoning (15 patients, 21.42%), 07 patients died, with a mortality of 46.67%. Seven patients with narcotic overdose were all discharged, while one out of 04 patients of organophosphate poisoning (5.72%) and 05 out of 08 copper sulphate poisoning patients (11.43%) could not survive. In 07 patients, the agent could not be identified. Most poisonings encountered in our study were non-accidental, and many were (27 patients, 38.57%) those patients who were victims of robbers. The favourite agent of these people was benzodiazepines (15 cases), Dhatura (4 patients), narcotic drugs (1 patient) and an unknown agent in 07 cases. Suicidal poisoning was the largest group with 31 cases (44.28%). We conclude that poisoning is the single largest cause of coma at our hospital emphasizes the need for poison information centres in our country, on the pattern prevalent in the West.

Key words: Poisoning, ICU, suicidal, benzodiazepine, wheat preservative

Unknown, unaccompanied and unconscious (usually called as Baba of unknown origin) patients presenting to the emergency ward of secondary or tertiary care hospitals is a common occurrence. Besides structural, metabolic or CNS derangements, poisoning remains an important differential diagnosis in them.

Published statistics in Pakistan from Mayo Hospital, Lahore revealed more than 28% patients presented to the Emergency with unconsciousness. A look at the general intensive care unit statistics over the same period revealed an admission figure of 35% for coma, with an alarming mortality rate of 72%^{1,2}.

A knowledge of coma aetiology is crucial to the successful management of this very grave clinical situation and has important prognostic implications as well^{1,3}. While many studies have been undertaken in the West to determine coma aetiology and detect prognostic correlates^{4,7}, there is only few indigenous studies present on this topic^{1,2}. This deficiency forces emergency physicians in Pakistan to rely on Western figures for coma aetiology, which do not reflect our circumstances accurately. The purpose of this work was the determination of coma aetiology in our patients, and to follow them during their hospital stay to determine their outcome especially of those patients having Medical coma because of poisonings.

Aims and objectives:

To study the etiological distribution in coma resulting from poisoning and its outcome.

Material & methods

This study was planned as a prospective and observational study, in which the participants were followed through out their hospital stay but no therapeutic interventions were performed as a part of the study protocol. The study was conducted in South Medical Ward of Mayo Hospital, Lahore from January 2003 to December 2003. Three hundreds and sixty five patients presenting in emergency ward with sustained impairment of consciousness were studied. A thorough history and examination was obtained for each case. The findings were then subjected to statistical analysis. All the patients were managed intensively, and as far as possible using available resources, optimally, during their hospital stay. The patients were followed through their hospital stay to determine the outcome after the current episode of coma. One of three possible outcome categories was established, recovery (discharge), death, and a category in which the proximate outcome remained unknown because they could not be followed up further, either due to referral, or self discharge (by attendants) against medical advise.

Inclusion criteria: Adult patients with sustained impairment of consciousness occurring as a result of poisoning.

Exclusion criteria

- ◆ Patients falling in pediatric age group.
- ◆ Patients succumbing to their illness so rapidly that any diagnostic work up could not be performed.

Results:

The distribution of etiological categories of coma was studied and an interesting trend was revealed. Poisonings were the leading cause (70 i.e. 19.18%) in these patients followed by cerebrovascular accidents (CVA), including both hemorrhagic (54 i.e. 14.25%) and ischemic (31 i.e. 8.5%) strokes, hepatic coma (45 i.e. 12.32%), uremic coma (44 i.e. 12%) and diabetic coma (39 i.e. 10.68%), (table 1).

There were a total of 218 patients with metabolic causes of coma, and poisonings contributed the largest chunk out of these (70 patients, making up 32.11% of metabolic comas). Poisoning had a relatively good prognosis, with only 25.71% mortality.

Due to its frequency, and the fact that the very different nature of agents in this group makes it undesirable that it should be considered as a homogenous entity, we shall look into the individual causes of poisoning, and their outcome.

Benzodiazepines were the commonest agent used. There were 20 patients with poisoning due to this cause (28.57%) and all recovered. Fifteen of these were poisoned by anti-social elements with a motive to rob them. The second largest group was wheat preservative poisoning (15 patients, 21.42%), 07 patients died, with a mortality of 46.67%. Seven patients with narcotic overdose were all discharged, while 03 patients exposed to benzene and 02 to chlorine died (100% mortality). In our series there were 04 patients of organophosphate poisoning (5.72%) with 25% mortality and out of 08 copper sulphate poisoning patients 05 could not survive. There were 04 patients with Dhatura poisoning, who were discharged after successful treatment with neostigmine. In 07 patients with poisoning, the exact agent could not be identified, although there was a clear history of poisoning (tables 2, 3).

Most poisonings encountered in our study were non-accidental, and 27 patients (38.57%) those patients who were victims of robbers. The favorite agents of these people were benzodiazepines (15 cases), Dhatura (04 patients), narcotic drugs (01 patient and unknown agent (07 cases). Suicidal poisoning was the largest group with 31 cases (44.28%). The most commonly used suicidal agent was aluminum phosphide, a wheat preservative (15 patients). Other agents used were benzodiazepines, copper sulphate, benzene and an unknown agent, which could not be identified, because the patient died before disclosing the agent used. The remaining 12 cases (17.14%) were accidental poisonings, with occupational exposure to chlorine (02 patients) and organophosphates in 04 cases, and accidental overdose of a narcotic agent in 06 drug addicts (tables 2, 3).

Table 1: Category of Coma according to major etiologies

Aetiologies	n=	%age
Poisonings	70	19.18
Hemorrhagic CVA	52	14.25
Ischemic CVA	31	8.5
Hepatic coma	45	12.32
Uremic coma	44	12
Diabetic coma	39	10.68

Table 2: Modes of poisoning and etiology

Modes and Etiology	n=
<u>Suicidal</u>	<u>31</u>
Wheat preservative	15
Benzodiazepines	05
Copper sulphate	08
Benzene	03
<u>Accidental</u>	<u>12</u>
Chlorine	02
Organophosphorus poisoning	04
Narcotics	06
<u>Homocidal/Malafied intention</u>	<u>27</u>
Benzodiazepines	15
Dhatura	04
Narcotics	01
Unknown	07

Table 3: Various types of poisonings and their outcome

Types Of Poisoning	No. Of Cases	%age	Outcome					
			Died		Discharged		Unknown	
			No.	%	No.	%	No.	%
Benzodiazepines	20	28.57	---	---	20	100.0	---	---
Wheat preservative	15	21.42	07	46.67	08	53.33	---	---
Narcotics	07	10.00	---	---	07	100.0	---	---
Unknown	07	10.00	---	---	04	57.14	03	42.86
Benzene	03	04.28	03	100.0	---	---	---	---
Copper sulphate	08	11.43	05	62.50	03	37.50	---	---
Chlorine	02	02.85	02	100.0	---	---	---	---
Dhatura	04	05.72	---	---	04	100.0	---	---
Organophosphate	04	05.72	01	25	03	75.00	---	---
Total	70	99.99	18	25.71	49	70.00	03	4.28

Discussion:

The significance of studies based on coma etiology lies in the fact that knowledge of the common causes of coma is a crucial time saving factor in the management. Coma is not a homogenous entity; rather it is a catastrophe, which transcends the boundaries of organ systems. Successful management of a comatose patient critically depends on prompt identification of the causative pathology, and this task is made easier if the emergency physician is familiar with the common causes likely to be encountered in his setup. It was with this factor in mind that this was conducted as a primarily etiological study, though as a subsidiary objective; prognostic correlates were also evaluated^{1,2}.

The principal objective of this study was the determination of coma etiology in Pakistan and to detect any differences from the figures reported in Western series. In Plum and Posner's series of 500 patients, coma due to diffuse/metabolic encephalopathies was the leading category, accounting for 65% of all cases, followed by coma due to structural lesions (33%) and among metabolic causes, almost 50% were cases of poisoning⁸. In Gasporovic et al's series of 665 comatose patients in an ICU over a five-year period, metabolic conditions were the most important cause of coma, and the foremost among metabolic causes were poisonings and sepsis⁴. Comparable results were obtained in our study: the maximum number of cases fell into the category of metabolic coma (59.73%), followed by hemorrhagic CVA (14.25%) and ischemic CVA (8.5%). While the categorical distribution of cases reflects similarity between our figures and those quoted in Western literature, a look at the detailed break up of coma etiology in our study reveals a distinctly indigenous pattern. The commonest individual cause of coma that we encountered was poisoning, like the aforementioned works, but the etiology of poisoning was dissimilar. In these series as well as others conducted in the West, the principal cause of poisoning was tricyclic antidepressants, and other common drug poisonings included barbiturates, benzodiazepines, paracetamol and anticonvulsants⁹. Suicidal poisonings are by far the most important cause in their series, and homicidal poisonings are rare. In contrast, we encountered a large number of cases in which the patient was the victim of poisoning for the sake of robbery, and in these cases commercially available tablets of benzodiazepines were used in a pulverized form, mixed with some foodstuff that the victim was enticed to try. A major cause of poisoning, and the commonest suicidal

agent, was a wheat preservative sold in the form of tablets for the purpose of fumigating grain: the unfortunate aspect of these cases was their young age and very high fatality rate. Waseem et al. have reported a mortality rate of 80% within 72 hours in these patients in a larger series published in 1997¹⁰. Sharma et al. reported wheat preservative emergency as the most common self-poisoning agent both in adults and children in the subcontinent¹¹.

Poisoning also had a relatively good prognosis, with a mortality of 25.71%. In Sacco et al's series the overall poor outcome for coma due to Medical causes was 61% and poisonings itself had 27%³.

Recommendations:

The fact that the single largest cause of coma in our study is poisoning emphasizes the need for poison information centers in our country, on the pattern prevalent in the West.

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