Unknown Poisoning Amongst Serving Personnel

Lt Col J Prakash*, Col PK Singh[†], Col A Kotwal, SM[#], Lt Col TS Ramakrishnan^{**}

Abstract

Background: Poisoning is recognized as an important health problem in many countries of the world. There is incomplete information on poisoning accidents, which is a major problem in developing countries.

Methods: A cross-sectional analysis of hospital records of armed forces personnel admitted with a provisional diagnosis of unknown poisoning was carried out.

Result: Unknown poisoning represented 0.25% of hospital admissions and 6584 man-hours were lost. 85% poisonings occurred at railway station and majority were food related. Average length of stay in the hospital was 14.69 days. Ten patients required intensive care and two patients were admitted to the psychiatry ward.

Conclusion: Majority of the incidents occurred in railways, signifying the importance of health education and precaution while proceeding on leave. Since, most of the affected were young soldiers, education should start from recruiting centers. Few patients had alcohol intoxication reflecting their dependence potential and need for reinforcing prohibition on alcohol consumption during travel.

MJAFI 2009; 65 : 41-43

Key Words : Unknown poisoning; Serving soldiers

Introduction

Poisoning refers to the damaging physiologic effects of ingestion, inhalation, or other exposure to a range of pharmaceuticals, illicit drugs and chemicals, including pesticides, heavy metals, gases/vapors and common household substances. Poisoning is recognized as an important health problem in many developed countries and is ill defined in many developing nations [1]. Poisoning can be unintentional, suicidal, homicidal or of undetermined intent. In terms of International Classification of Disease Code 10 (ICD 10) it can be categorized as either all poisonings as a group or can be subdivided into unintentional poisonings, suicides, homicides and poisoning of undetermined intent [2]. Poisoning might be classified as of undetermined intent if the medical examiner lacked sufficient evidence to determine whether the death was unintentional, suicidal, or homicidal. The same is commonly called as unknown poisoning.

The sources of data may include hospital discharge data, poison control center data, medico-legal documents, mortality data, and the census details. A significant number of studies are available from developed nations but there is lack of data and studies from developing countries. Poisonings were reported as the underlying cause of death for 18,549 people in the United

States in 1995 [3]. Poisoning and toxic effects were the second most common (16% of injury deaths) and were the underlying cause of 14% of injury deaths [4]. In one study the average annual number of emergency department visits over three years was 93 million, of which 37 million were injury related and one million were poisoning-related [5]. British researchers have found alcohol to be an important contributory factor to injury and poisoning death [6].

The incidence of poisoning, both intentional and unintentional, is on the rise. In USA, poisoning by solids and liquids, the most common form of accidental injury and death by poisoning, accounts for 1 in 150 non-fatal accidents and 1 in 5 deaths [3]. However, even in developed countries, lack of information is a major problem for the fatal cases as 99% are shown in unknown category. Data from poison information centre of All India Institute of Medical Sciences (AIIMS) reveals the highest incidence of poisoning in the age range of 14-40 years with male preponderance. The common mode of poisoning was oral (88%) and the unknown category constituted 2.9% of the total poisonings [7].

In the Armed Forces, a number of cases are admitted every year in various stages of unconsciousness, subsequently coming out with a history of ingestion of

*Classified Specialist (Psychiatry), 167 MH, C/o 56 APO. †Senior Advisor PSM & ADH HQ (Med) Eastern Command, #Associate Professor (Department of Community Medicine), AFMC, Pune. **Graded Specialist (PSM), SHO Agra Cantt.

some unknown poison either accidentally or intentionally or administered by some stranger. The data on unknown poisoning, available at MISO (Med & Health), shows an incidence of 0.206 per thousand in the year 2003 and an increasing yearly trend thereafter. An important aspect is that majority of these cases (>65%) are classified as “Unknown Poisoning”, with specific poisoning agent being identified in less than 30% of cases [8]. Of course this data does not include similar details regarding Air Force and Naval personnel admitted to army hospitals or their respective service hospitals.

The paucity of evidence-based information on the management of poisoned patient and lack of information on associated socio-demographic factors, appropriate preventive and remedial intervention strategies led us to study the clinico-social profile of serving soldiers admitted with diagnosis of unknown poisoning (poisoning of undetermined intent) in a large tertiary care service hospital in North India.

Material and Methods

A cross sectional study was carried out in a large service hospital of North India. All serving soldiers admitted with provisional diagnosis of unknown poisoning during the period from 1st Jan 2003 to 31st Dec 2003 were identified with the help of admission and discharge register. Various details like their personal particulars, history of illness, clinical examination, investigative procedures, treatment modalities and final disposal were studied from Admission & Discharge register and Medicolegal case register.

Results

A total of 60 patients (54 Army, 5 Air Force, 1 Navy) were directly admitted during the study period. Average age of the patients was 30.29 years (range 19 to 47 years). The average length of service was 10.41 years (range 1 to 28 years). More than 75% were married and majority (93%) were Hindus. Data revealed that most of them belonged to Haryana (10), and Uttar Pradesh (10) followed by Punjab (6), West Bengal (4), Rajasthan (3), New Delhi (3) and Karnataka (3).

Unknown poisoning represented 0.25% of the hospital admissions. Most (85%) cases of poisonings occurred at railway stations. Majority were food related (88.3 %) and only seven were subsequent to alcohol ingestion. Personal belongings were found to be missing in seven of these patients. 22 (36.7%) were found in unconscious state on identification, of which 10 (16.7%) suffered this unknown poisoning while on leave. All the patients were hospitalised, of which two were admitted to the psychiatry ward.

Clinical examination on admission revealed stable vital parameters in most of them. Three of them had fever and in these, later evaluation revealed one to be suffering from alcohol dependence syndrome and one from febrile encephalopathy. Pupils were dilated in two patients and constricted in one patient. Neurological examination revealed decreased deep tendon reflexes in two patients, mute in one

and extensors plantar in one patient. Four patients had associated physical injuries, three patients had stigmata of liver disease and one patient had ataxia.

Fifty-four patients received provisional diagnosis of unknown poisoning on admission and three were diagnosed as acute alcohol intoxication. Other categories of diagnoses were psychiatric investigation, copper sulphate poisoning and confusion investigation.

Average length of stay in the hospital was 13.71 days (range 3 to 81 days). This reflected that a total of 6584 man-hours were lost (if we take a conservative estimate of total hours devoted per day by an individual to service as eight hours). Month-wise assessment of incidence of poisoning revealed that maximum cases occurred in the month of March followed by December and least in June. 80% incidents occurred in evening and at night, with a large number (58.3%) between 2000 hrs and 0100 hrs. Of the 60 patients, only two patients died in the hospital with final diagnosis of head injury with subdural hematoma and copper sulphate poisoning respectively. One patient was invalidated out of service for alcohol dependence syndrome and others were either transferred to hospitals near their units or discharged to home or respective units.

Discussion

As there was dearth of literature in this field many of our findings did not have any contemporary data to be compared with. The average age of the patients in our study was similar to that found at AIIMS [7]. Hospitalization period of our study corroborated with findings of US National Health survey of 1-70 days [9]. Majority of the incidents occurred in railways while on leave thus signifying the importance of health education of all individuals proceeding on leave.

Most of those affected were other ranks i.e. younger and healthier persons, which highlights the importance of preventive education amongst young recruits. Most of the poisoning was food related and seven had alcohol intoxication, which reflects dependence potentials in many of our young soldiers and a need to review existing policies of alcohol issue in the Armed Forces. As 80% cases occurred between 2000 to 0100 hours our soldiers should be taught the importance of being alert while on travel of any kind. The importance of this issue can be gauged from the fact that it formed a major headline in one of the leading national dailies “Gangs drug, rob soldiers; Army baffled” [10]. It is thus time a concerted and effective intervention is planned to prevent this type of poisoning.

A specific format for proper documentation, precision in history taking and clinical information will go a long way in identification and management of unknown poisoning. Minimum information that is required for diagnosing poisoning by an unknown agent is shown in Table 1. Implementation of preventive activities by the

Table 1

Information required for diagnosing poisoning by an Unknown Agent

S No.	Information sheet
1	Possible toxic agent
2	Product name (s), active ingredients
3	Inactive ingredients, possible contaminants
4	Expiry date
5	Concentration
6	Dose (approximation)
7	Name, number, rank and unit of the victim
8	Age and weight
9	Past medical history
10	Past injuries or other poisonings
11	Allergies
12	Current and past medications
13	Route(s) of exposure
14	Events (single exposure? repeated doses? chronic intoxication?)
15	Symptoms and time of onset
16	Progression of symptoms
17	Time from exposure to presentation at health-care facility
18	Prior decontamination and other treatments
19	Serial changes in vital signs or findings on physical examination
20	Environment (family members, unit people, neighbours)
21	Physical Environment (accommodation, income, locality, lighting and other amenities)
22	Medications or chemicals accessible in the home/unit
23	Family members on prescription medications
24	Estimated time of exposure
25	Recent travel
26	Mess/Restaurant dining
27	Suspect foods
28	Clues: open containers, plants that have leaves missing, tablets on floor, weapons
29	Social environment
30	Other ill family members or pets
31	Psychiatric illness of family members (and accessibility of their medication)
32	Maternal-child interaction (behavioral problems, power struggles)
33	Disorganized, chaotic home; little supervision
34	Frequent previous injuries/poisonings
35	“Chemical” child abuse / Munchausen syndrome by proxy

health care workers such as education of the patient and unit, commonly called as toxicovigilance are important [11].

An effective approach for prevention and treatment of poisoning would be establishment of Poison Control Centers, with access to computerized database and staff that has a high level of expertise dedicated to diagnosis and management of poisonings [12]. Initially one such center could be opened in the hospital reporting maximum number of admissions of such cases. At unit level, soldiers proceeding on leave should be given initial briefing on

poisoning and its prevention. It is preferred that they travel in uniform and exercise buddy system for going on leave. Advocating a separate military compartment in each train and waiting room at Movement Control Centres is not unreasonable, given the amount of man hours lost on this account.

Conflicts of Interest

None identified

Intellectual Contributors of Authors

Study Concept : Lt Col J Prakash, Col PK Singh

Drafting & Manuscript Revision : Lt Col J Prakash, Col A Kotwal, SM

Statistical Analysis : Col A Kotwal, SM, Lt Col J Prakash

Study Supervision : Lt Col J Prakash, Lt Col TS Ramakrishnan

References

1. Forget G. Epidemiological assessment of acute poisoning incidence in developing countries. Manuscript reports 219e. International Development Research Center, 1988.
2. World Health Organization. International Statistical Classification of disease and related health problems. 10th revision. Geneva : World Health Organization, 1992.
3. Fingerhut LA, Cox CS. Poisoning mortality 1985-1995. Public Health Reports 1998;113: 218-33.
4. Anderson RN, Minino AM, Fingerhut LA, Warner M, Heinen MA, McCaig LF. Deaths: injuries, 2001. Natl Vital Stat Rep 2004 ;52:1-86.
5. Burt CW. Poisoning-Related Visits to Emergency Departments in the United States, 1993-1996. J Toxicol Clin Toxicol 1999;37:817-26.
6. Stanistreet D, Jeffrey V. Injury and poisoning mortality among young men—are there any common factors amenable to prevention? Crisis 2003; 24:122-7.
7. Srivastava A, Peshin SS, Kaleekal T, Gupta SK. An epidemiological study of poisoning cases reported to the National Poisons Information Centre, All India Institute of Medical Sciences, New Delhi. Hum Exp Toxicol 2005; 24: 279-85.
8. Adhoc Qery. Database on known & unknown poisoning among service personnel in the Armed Forces, Management Information System Organization (Medical and Health), New Delhi. 2004
9. Warner M, Barnes PM, Fingerhut LA. Injury and poisoning episodes and conditions; National Health Interview Survey, 1997. Vital Health Stat 2000;10: 202.
10. The Times of India, New Delhi, Monday, July 25, 2005. Gangs drug, rob soldiers; Army baffled & Militants can misuse stolen Army I - cards. Pages 1 & 8. Available at www.timesofindia.com. Accessed on 25 2005.
11. Descotes J, Testud F. Toxicovigilance: A new approach for the hazard identification and risk assessment of toxicants in human beings. Toxicol Appl Pharmacol 2005 [Epub ahead of print]
12. Woolf AD. Poisoning by Unknown Agents, Pediatrics in Review 1999; 20: 5.