

# HOSPITAL ADMISSIONS DUE TO ACUTE POISONING IN THE NEW TERRITORIES, HONG KONG

Thomas YK Chan and Julian AJH Critchley

Department of Clinical Pharmacology, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, NT, Hong Kong

**Abstract.** To study the pattern of acute poisoning in the New Territories East of Hong Kong, 291 adult cases admitted to the Prince of Wales Hospital in 1989 were reviewed. The female-to-male ratio was 2.3 to 1 and the majority of patients (83%) were below the age of 40. The main poisons involved were hypnotics and sedatives (44.3%), household products (14.8%) and analgesics (10%). The poisoning was intentional in the majority of cases (98.6%). A specific antidote was necessary in 5.2% of cases. Four patients died after admission giving an overall mortality of 1.4%. When compared to the findings from other western countries, important variations in the pattern of acute poisoning were seen in Hong Kong. Firstly, a substantial proportion of drugs ingested were not dispensed labeled although their nature could usually be determined. Secondly, "Dettol", a household antiseptic, was commonly used in self-poisoning episodes. The lack of drug identification labeling on dispensed medicines outside hospitals is of great concern to all physicians in Hong Kong.

## INTRODUCTION

As in western countries, acute poisoning due to drugs or chemicals is an important health problem in Hong Kong. In the 12-month period between 1988 and 1989, more than 3,700 patients were treated in hospitals for acute poisoning (Director of Medical and Health Services, Hong Kong, 1989). It has been estimated that each year about 5 to 6% of all acute medical admissions to the Prince of Wales Hospital (PWH) are due to acute poisoning (Chan *et al*, 1993). However, little is known of its epidemiological features in Hong Kong as there have been few surveys dealing with this group of patients (Chan *et al*, 1994).

We therefore retrospectively studied a group of patients who were treated in the PWH for acute poisoning over a 12-month period in 1989.

## MATERIALS AND METHODS

The PWH is a 1,400-bed general teaching hospital situated in the New Territories East of Hong Kong serving a population of about one million in 1989. There were three accident and emergency depart-

ments in this region, including the one at the PWH. All emergency cases were first seen at one of the accident and emergency departments and patients requiring hospital treatment were then admitted to the PWH.

Cases of acute poisoning were identified by reviewing the admission records of the eight general medical wards. Patients included in the survey were those who intentionally took a greater than "recommended" dose of medication. Also included were patients whose admission was thought to be a result of drug or alcohol abuse. Those patients who used other methods of deliberate self-harm (for example, hanging or laceration) only or cases of adverse reaction to drugs were excluded.

The hospital record of each patient was then reviewed and the following patient details noted: age, sex, time of overdose, time lapsed between overdose and admission to an accident and emergency department, stated reason for overdose, agents used, treatment given, history of previous attempt and psychiatric diagnosis, significant sequelae and their outcome.

## RESULTS

During the 12-month period, 291 cases of acute poisoning were identified and analyzed. These 291 cases involved 273 patients, of whom 263 were

---

Correspondence: Dr Thomas YK Chan, Department of Clinical Pharmacology, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, NT, Hong Kong. Tel: (852) 6363130; Fax: (852) 6373929

Chinese. Eighteen patients were admitted for acute poisoning on two or more occasions. The data presented below are for cases of acute poisoning rather than for patients.

The ages of the 291 patients ranged from 15 to 83 years of age. The mean ( $\pm$  SD) age of the group was  $29.5 \pm 12.6$  years. As can be seen from Fig 1, the majority of patients (83%) were aged 40 years or less. In 22.7% of cases, the patients were aged between 15 and 20 years. Females outnumbered males in all but one age group and the overall female-to-male ratio was 2.3 to 1.

There appeared to be a variation in the number of admissions on different week days and during different time of the day. There were more admissions on Mondays (18.6%) and Thursdays (17.2%) than the rest of the week (range 10.5 to 15.1%). More patients were admitted in the evening (16.00 – 00.00) (49.1%) than during the night (00.00 – 08.00) (30.7%) or the day (08.00 – 16.00) (20.2%).

The majority of patients (82.7%) presented to an accident and emergency department within four hours of exposure to a poison. The median latency time was 1.5 hours (range 0.1 hours to 3 days).

About one-third of the patients took two or more drugs. As can be seen from Table 1, the main drugs/chemicals used were hypnotics (44.3%), household products including "Dettol" (14.8%) and analgesics (10%). Dettol is a wisely used household antiseptic containing chloroxylenol 4.8%. It is very noteworthy that 41.6% of drugs involved were not precisely identified although normally it was possible to deter-

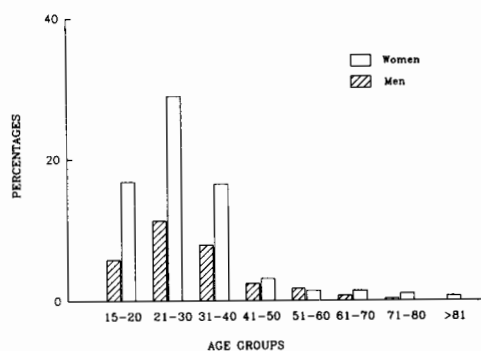


Fig 1—Age and sex distributions of 291 cases of acute poisoning in 1989.

Table 1

Drugs and chemicals taken by 291 overdose patients.

Drug/chemical	Main % (No.)	Drug total % (No.)
Hypnotics/sedatives (total)	44.3 (129)	35.7 (152)
Not precisely identified	24.0 (70)	18.8 (80)
Benzodiazepines	15.1 (44)	12.7 (54)
Others	5.2 (15)	4.2 (18)
Household products (total)	14.8 (43)	11.0 (47)
"Dettol"	10.3 (30)	7.3 (31)
Others (eg cleansing fluids)	4.5 (13)	3.7 (16)
Analgesics (total)	10.0 (29)	8.7 (37)
Paracetamol or paracetamol-containing drugs	7.6 (22)	6.3 (27)
Aspirin or aspirin-containing compound	2.4 (7)	2.4 (10)
Alcohol (total)	7.2 (21)	17.8 (76)
Pesticides (total)	3.4 (10)	2.8 (12)
Insecticide	2.4 (7)	1.9 (8)
Paraquat	0.7 (2)	0.5 (2)
Others	0.3 (1)	0.5 (2)
Neuroleptics (total)	2.7 (8)	2.4 (10)
Not precisely identified	0.7 (2)	0.5 (2)
Phenothiazines	2.0 (6)	1.9 (8)
Opiates (total)	2.4 (7)	1.6 (7)
Other drugs (total)	11.7 (34)	17.4 (74)
Known	5.8 (17)	8.7 (37)
Unknown	2.1 (6)	4.9 (21)
Topical preparations	2.7 (8)	2.1 (9)
Chinese proprietary medicines	1.0 (3)	1.6 (7)
Coal gas (total)	2.0 (6)	1.6 (7)
Other chemicals (total)	1.4 (4)	0.9 (4)
<b>Total</b>	<b>100 (291)</b>	<b>100 (426)</b>

"Drug total" is the sum of main and all secondary drugs/chemicals. "Not precisely identified" means that only the type of drug/chemical is known while the actual agent has not been identified.

mine their nature from the history and/or the clinical picture. This was because the majority of drugs prescribed outside hospitals or bought over-the-counter were not dispensed labeled, and many patients did not know the names of their medications.

Sixty (21%) patients were previously admitted for acute poisoning. The vast majority (73.9%) of subjects intentionally poisoned themselves following some emotional or social crisis. Thirty-one (10.6%) patients were admitted because of alcohol ( $n = 16$ ) or

drug (opiates in 7, hypnotics in 8) abuse. The motives for taking an overdose were not clear in 12 (4.1%) patients. In four (1.4%) cases, the exposure to poisons was considered to be accidental. Only 29 (10%) patients had psychiatric illnesses (anxiety/depression in 17, psychosis in 10, personality disorders in 2) as indicated by their past medical history or formal psychiatric assessment after admission.

At presentation, 40.9% of patients were alert, 4.1% were confused and the remaining 55% had impaired conscious level ranging from drowsiness to coma. Hypotension, as defined by Rygnestad (1989), was present in four (1.4%) patients following poisoning with alcohol and/or hypnotics ( $n = 3$ ) or sulphuric acid ( $n = 1$ ).

Gastric emptying using a nasogastric tube was performed in 188 (64.6%) patients and a further four (1.4%) patients received ipecacuanha. Hypotension, if present, responded readily to the infusion of normal saline. Seven (2.4%) patients were ventilated because of respiratory failure ( $n = 4$ ), respiratory depression ( $n = 2$ ) or carbon monoxide poisoning ( $n = 1$ ). Fifteen (5.2%) patients received specific antidotes following poisoning with opiates ( $n = 7$ ), paracetamol ( $n = 5$ ), organophosphates and carbamates ( $n = 3$ ).

Twenty-six (8.9%) patients who required treatment for their psychiatric illness or who were at high risk of attempting suicide again were taken over by the psychiatrists for further management. Four patients, all females, aged between 23 and 73 years died. The main poisons responsible their deaths were paraquat ( $n = 2$ ), sulphuric acid ( $n = 1$ ) and detergent ( $n = 1$ ).

## DISCUSSION

This retrospective study provides physicians in Hong Kong with much needed information on the pattern of acute poisoning. In agreement with the findings from other countries (Jacobsen *et al*, 1984; McGrath, 1989; Rygnestad, 1989; Wynne *et al*, 1987), there is a female predominance and most subjects are young adults suffering from a temporary emotional or social crisis. We also find that hypnotics and sedatives, predominately the benzodiazepines, are the leading agents used in self-poisoning.

However, important variations in the pattern of acute poisoning are seen in Hong Kong. As can be

seen in Table 1, a substantial porportion of drugs ingested were not precisely identified although it was usually possible to determine their nature from the history and/or clinical features. Dettol and other household products were more commonly used for self-poisoning than reported elsewhere. Not surprisingly, we tend to see more cases of poisoning with Chinese proprietary medicines.

In Hong Kong, the problem of identifying the drugs used by patients in acute poisoning tends to be more complicated than it is elsewhere (Chan *et al*, 1992; Chan and Critchley, 1991). Firstly, most containers, often small plastic bags, used for drugs prescribed outside hospitals are rarely labeled with the names of their contents. Secondly, self-medication with orthodox and Chinese traditional medicines is common and these may often be obtained over-the-counter from a drug store. Thirdly, patients often do not know exactly the medications they are taking although they normally know their nature and the purpose for taking them. Fourthly, for each drug, there may be many local and other preparations of different colors or shapes making positive identification extremely difficult.

We also confirm that the majority (94.8%) of patients admitted to hospital after acute poisoning require no more than supportive care (Proudfoot, 1982). Only eight (2.7%) of these were admitted to intensive care or coronary care units for monitoring or support of vital functions. In the remaining 15 (5.2%) cases, the use of a specific antidote was considered necessary. By supporting the vital functions and giving specific antidotes where indicated, nearly all patients recovered. Of the four patients who died, little could have been done in three following poisoning with paraquat or concentrated sulphuric acid. The fourth death was due to adult respiratory distress syndrome complicating aspiration of some unknown non-corrosive detergent; this patient had unfortunately received "gastric lavage" in the form of an induced emesis via a nasogastric tube. We thus recommend using the oral route with a wide-bore tube for gastric emptying in patients with acute poisoning (Proudfoot, 1982).

In summary, acute poisoning is a prominent health problem in Hong Kong and more studies of this patient group are needed. The lack of drug identification labeling on the majority of medicines dispensed outside hospitals is of great concern to all physicians in Hong Kong.

ACKNOWLEDGEMENTS

We would like to thank Ms Vesta SM Lai, Ms Patricia J Anderson and Ms Karen Wong for their assistance in this study.

REFERENCES

- Chan TYK, Chan JCN, Tomlinson B, Critchley JAJH. Adverse reactions to drugs as a cause of admissions to a general teaching hospital in Hong Kong. *Drug Saf* 1992; 7 : 235-40.
- Chan TYK, Critchley JAJH. Adverse drug reaction monitoring in Hong Kong. *J Hong Kong Med Assoc* 1991; 43 : 150-1.
- Chan TYK, Critchley JAJH, Chan JCN, Tomlinson B. Disease profiles in Chinese in Hong Kong: an analysis of the primary diagnoses in 561 acute hospital medical admissions. *Southeast Asian J Trop Med Public Health* 1993; 24 : 766-8.
- Chan TYK, Critchley JAJH, Chan MTV, Yu CM. Drug overdosage and other poisoning in Hong Kong - the Prince of Wales Hospital (Shatin) experience. *Hum Exp Toxicol* 1994; 13 : 512-5.
- Departmental Report from the Director of Medical and Health Services 1988-89, Hong Kong, 1989.
- Jacobsen D, Frederichsen PS, Knutsen KM, Sorum Y, Talseth T, Odegaard OR. A prospective study of 1212 cases of acute poisoning: general epidemiology. *Hum Toxicol* 1984; 3 : 93-106.
- McGrath J. A survey of deliberate self-poisoning. *Med J Aust* 1989; 150 : 317-24.
- Proudfoot A. Diagnosis and management of acute poisoning. London: Blackwell Scientific Publications, 1982.
- Rygnestad T. A comparative prospective study of self-poisoned patients in Trondheim, Norway between 1978 and 1987: epidemiology and clinical data. *Hum Toxicol* 1989; 8: 457-82.
- Wynne H, Bateman DN, Hassanyeh F, Rawlins MD, Woodhouse KW. Age and self-poisoning: the epidemiology in Newcastle upon Tyne in the 1980s. *Hum Toxicol* 1987; 6 : 511-5.