

Epidemiological Study of Poisoning in Patients of Karaj Shariati Hospital in 2011 to 2012

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ARTICLE INFO

Article Type:
Original Article

Article History:
Received: 8 July 2013
Revised: 19 July 2013
Accepted: 16 Aug 2013

Keywords:
Poisoning
Tramadol
Seizure
Benzodiazepine
Opium

ABSTRACT

Background: Acute poisoning is one of the most problems of health systems in the world. The aims of this study are evaluation of demographic characteristics and causes of poisonings in patients referred to Karaj Shariati hospital.

Methods: A cross sectional study was done in one year. With a non-probability convenience sampling, all of poisoning patients admitted in Karaj Shariati hospital from June 2011 to June 2012 were studied. Data collected from patients records and then analyzed.

Results: One hundred seventy two drug poisoning patients with mean age of 29.8 (SD=13.4) years evaluated. The most common drugs which caused poisoning were: Benzodiazepines, Tramadol, Psychiatry drugs and Acetaminophen. 12.8 percent of patients had drug-induced seizure and mortality rate was 5.8 %. There was a relation between Tramadol poisoning and drug-induced seizure (p value=0.000, Odds Ratio=12.8, 95%Confidence of Interval (4.7-34.8)).

Conclusion: This study showed that Tramadol poisoning prevalence is high and opiates are the most common cause of death in drug poisonings, which show need to more educations in schools and addiction-disuse centers and more controls on pharmacies.

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► *Implication for health policy/practice/research/medical education:* Epidemiological Study of Poisoning in Patients of Karaj Shariati Hospital in 2011 to 2012

► *Please cite this paper as:* Hashemnejad M, Fatehi R. *Epidemiological Study of Poisoning in Patients of Karaj Shariati Hospital in 2011 to 2012. International Journal of Medical Toxicology and Forensic Medicine.* 2014; 4(1): 17-22.

1. Introduction:

The acute poisoning is one of the major challenges around the world. The incidence

of acute poisoning varied by site of studies for example about 200 per 100000 population in Norway (1) or 447 per 100000 population in Sri Lanka (2) and it is reported about 390 in 100000 in Mashhad in Iran (3).

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It has been estimated that one million serious unintentional poisonings occurring each year and in addition two million people hospitalized for suicide attempts with pesticides (4, 5).

The most common poisoning in developing country (except childrens) is intentional poisoning (6-8). Suicide has been estimated the tenth cause of death in 2020 (9). Drugs and chemicals are almost easily available in Iran so acute poisonings, either intentional or accidental, drug abuse and addiction are common (10-12).

Poisoning is variable and depends on the circumstances of regional, cultural, social and economic levels of people. So, epidemiological data is important to detection of toxicity and poisoning. Some information is essential to develop effective preventive and control strategies. With regard to this issue, which, so far has not conducted similar studies in suburban Karaj hospitals, it became the cause of variety in poisoning demographic evaluation in Shariati Karaj Hospital patients which is a local hospital.

2. Materials and Methods:

It is an annual cross-sectional study. Samples selected by non-probability convenience and evaluate all young and adult poisoning patients who admitted at Karaj Hospital since June of 2011 until June 2012.

The information on files completed by interview with hospitalization patients and in some uncompleted files, we call with the patient and complete data form (check list) for each patient. Unfortunately because of laboratory limitations of Karaj Shariati hospital, we couldn't determine drugs level in patient's serum and couldn't use screen tests to determine type of poisonings. We determined type of poisoning due to evidences with patients such as drugs empty boxes. Patients who

poisoned with more than one type of drug, calculated in each drug type statistics.

Then the collected information analyzed by SPSS (versions 19). The central indicator variables were calculated for the mean and standard deviation of the distribution index, and statistical tests such as chi square test, Fisher exact test and T test were used for data analysis.

Acceptable Type 1 error rate was 0.05 and all results are reported with 95% confidence area.

3. Results:

During one year study, there were 172 poisoning admitted cases in Karaj Hospital, that the youngest was 12 years old and the oldest 80 years old and mean age was 29.8 (SD=13.4).

The most common age group was 20-25 years old (34.9%). Figure 1, shows the frequency of poisoning in other age groups.

In terms of sex distribution there was 86 male patients (50%) and 86 females (50%). In terms of material status, married 96 patients (55.8%) and 76 cases of whom were single and divorced (44.2%).

All cases were intentional and self-harm (based on psychiatry consults opinions done for poisoned patients), 140 patients (81.4%) for the first time and 16 patients (9.3%) had a history of previous poisoning, 12 patients (7%) had a history of two previous self-harm and 4 patients (2.3%) had a history of three or more as their previous self-harm.

66 cases (38.3%) had a drug-abused history, that the most common drugs in descending order were Opium, Tramadol, Crystal, Crack, Heroin, Alcohol and Pethidine. It mentioned that some patient had multiple drug addictions and 106 cases (61.7%) had no reports about addiction.

Table 1 shows the type and frequency of substance abuse.

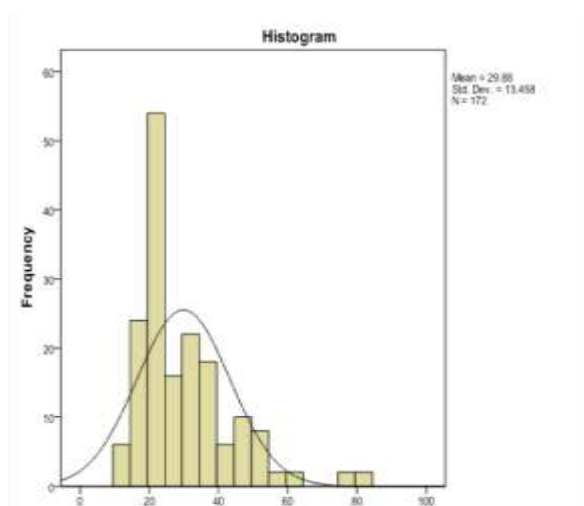


Fig. 1. The age distribution of poisoning patients.

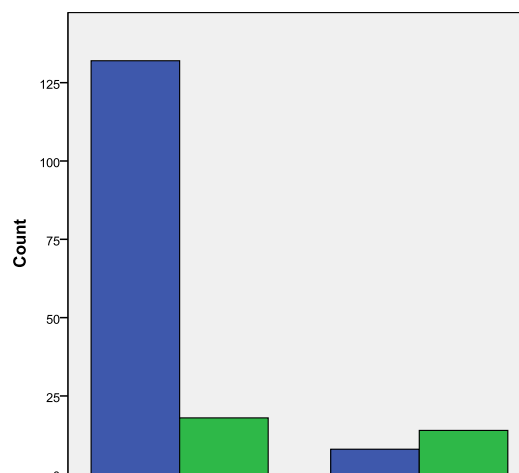


Fig. 2. Relation of Tramadol Poisoning & Drug Induced Seizure

Green dye: Tramadol Poisoning, Blue dye: Other Drugs Poisoning.

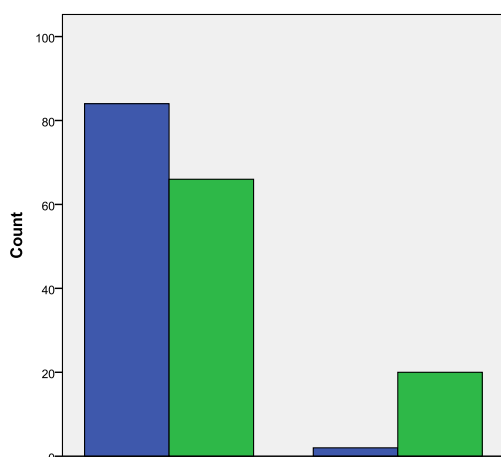


Fig. 3. The Relation of Patients Sex and Drug Induced Seizure

Green dye: Male, Blue dye: Female

30 cases (17.4%) were poisoned with unknown drug and even their family or participants didn't have any information about type of drug abused. Benzodiazepines were the cause of poisoning in 50 cases lonely or in combination with other drugs and were the most common cause of poisoning (35.2%). Table 2 explains types and prevalence of poisoning drugs completely.

Other drugs that were consumed in one or two cases were: Propranolol, Nifedipine, Omeprazole, Atorvastatin, Naltrexone and Phenobarbital.

The drug numbers that induced poisoning specified in 116 cases (67.4%).

Average number of drugs ingested was 22.8 (SD=16.8).

The mean GCS score on admission in ER was 12.3 (SD=8.2) and the mean duration of hospital stay was 3days (SD=4.1) respectively.

The CPK (creatinine phosphokinase) average was 312.7 U/L (SD=617.3) and CPK-MB was 31.0U/L (SD=45.2).

From the total number of patients studied was 10 patients (5.8%) had sadly died and 22 cases (12.8%) were complicated by seizures after poisoning. Neither of cases with this complication, there was no history of epilepsy.

Analysis

In the statistical analysis was performed, there was a significant association between Tramadol toxicity and seizures after exposure (p value=0.000, OR=12.8, 95% CI (4.7-34.8)).

This means that 43.7% of patients with Tramadol intoxication had seizure after poisoning, that it happened only 5.7% in other poisoning (figure 2).

On the other hand, the most common cause of poisoning induced seizure was Tramadol (The mean dose was 1100mg).

The mean age of patients in poisoning group with seizures was 27 years old (SD=8.5) and in group without seizures was 30.3 years old (SD=14) that did not have difference significantly (p value=0.28).

Table 1: The type and frequency of substance abuse in poisoning patients.

Addiction type	Frequency (%)
Opium	(18.6) 32
Tramadol	14 (8.1)
Crystal	10 (5.8)
Crack	10 (5.8)
Heroin	2 (1.1)
Alcohol	2 (1.1)
Pethidine	2 (1.1)

The mean age of patients with Tramadol poisoning was 22.3 years old (SD=4.41) and the mean age of patients with other drugs poisoning was 31.6 (SD=14.2) that were significantly different (p value=0.000).

There was significant correlation between sex of patients and poisoning drug type (p value=0.000). In the other hand poisoning with Benzodiazepines in females was more than males and poisoning with Tramadol in males was more than females. About Other drugs poisoning there was no significant difference.

The CPK level average in poisoning group with seizure was 361.09 U/L and in poisoning group without seizure was 304.52 U/L that did not have difference significantly (p value=0.69).

The CPK-MB level average in poisoning group with seizure was 23.09 U/L and in poisoning group without seizure was 32.3 U/L that did not have difference significantly (p value=0.37).

Seizures after poisoning occurred in males more than in females (figure 3). (p value=0.000, OR=12.7, 95% CI (2.8-56.4)) and it was more significant in single than married patients.

At the end post poisoning mortality rate was lower in married than single (p value=0.02, OR =0.18 95% CI (0.03-0.87)).

4. Discussion:

In our study the most common age of drug toxicity was 20-25 years old, that it had consistent with other studies which represents young age of intentional poisoning patients in all of world (2, 3, 6, 7, 13).

Table 2: The Types and Prevalence of Poisoning Drugs in This Study.

Drug type	Frequency (%)
Benzodiazepines	50 (35.2)
Tramadol	36 (25.3)
Antipsychotic & Anti depressant drugs	30 (21.1)
Acetaminophen	20 (14)
Opium	14 (9.8)
NSAIDS	12 (8.4)
Methadone	6 (4.2)
Crystal	6 (4.2)
Un known	30 (17.4)

About sex distribution there is controversies in different studies. In most studies, frequency of poisoning in female teenagers is more than male teenagers (2, 6, 13). In some other studies total frequency of poisoning in males and females are approximately similar as well our study (2, 8, 13).

Married patients in our study were more than singles which is contrast of other studies results (5, 6, 14). This paradox can be result of upper mean age of studied persons or lower mean age of marriage in these persons which evaluation of this subject need more studies.

38.8 % of studied patients were addict. In comparison of prevalence of 17% in other study was conducted in Iran (12), this prevalence of addiction is very high.

In our study, the most common cause of drug poisoning was Benzodiazepines with 35.2% prevalence, which is compatible with other studies (7, 9), although fortunately there is no high morbidity and mortality results with this type of drug.

The second stage was Tramadol. Although most of drug poisoning can induce seizure, Tramadol is the common cause of drug induced seizure and the rate of seizure with that is up to 40% (14-19). note that, this drug is easily available in Iran and some pharmacy count in as an over-the-counter drug, and some drug abuser ,used it as a withdrawal symptom suppressor, so, there is increasing in the prevalence of Tramadol abusing and poisoning (16, 17). As in our study, this drug is in second stage for

poisoning and first stage for seizure – inducing.

As we know the mortality rate due to toxicity studies vary based on geographic location, based on worldwide report, the mortality rate in poisoning is differ from 0.5% in developed country to 10% in some developing country(2). This range reported between 0.4% to 2% In Iran (6, 8, 15, 20).

In our study, the mortality rate calculated 5.8%, and this high range shown the economically and socially disadvantaged residents of this area and emphasized more advanced medical centers in the region.

In all mortality cases in this study, Opiates (Opium, Tramadol and Pethidine) lonely or in combination with other drugs (Crystal), are the main cause of drug poisoning (100%), that it had consistent with other studies (21, 22).

5. Discussion:

Due to the young age of patients who suffering from drug toxicity, it appears to education and training methods to solve problems and psychiatric follow up of high risk teenagers, can decreased the poisoning prevalence and mortality. This principal shows that addiction is an important risk factor for intentional poisoning and shows necessity for more controls on addicts' drug consumption.

Finally, we request all leader surveillance centers more on selling drugs, particularly Benzodiazepines, Tramadol and psychiatric drugs without a prescription to prevent or decrease drug toxicity.

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