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Research Article

Study and Evaluation of the Different Types of Poisoning Cases Encountered in a Secondary Care Hospital in Ras Al Khaimah

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Abstract

Objectives: To assess the type, clinical characteristic, management and outcome of different poisoning cases in a secondary care hospital in Ras Al Khaimah.

Methods: This was a prospective observational study conducted from October 2017 to May 2018 in a secondary care hospital in Ras Al Khaimah. Patient case notes related to admissions due to poisoning were identified and reviewed by the study investigator. Various details such as patient demographic characteristics, type, clinical characteristics and management of poisoning were entered in a suitably designed data collection form. The collected data was analyzed based on poison severity score and snakebite severity scale

Results: A total of 75 cases were recorded during the study period. There was a predominance of males [42 (56%)] compared females [33 (44%)]. The intention of poisoning was suicidal in majority of the cases [46 (61.3%)]. A total of 41 cases were recorded to be due to pharmaceutical agents, out of which paracetamol being the highest 15 (36.5%). Almost half the patients [35 (46.6%)] were only admitted for one day following exposure to the poison. Most of the patients were of Emirati nationality [30 (40%)] and belonged to the age group of 21 to 30 years [27 (36)]. Demographics like age and gender was found to be significantly associated ($p < 0.05$) with intention of poisoning and poisoning agent. While demographic parameters such as gender, age and marital status were found to be significantly ($p < 0.05$) associated with poisoning agent and intention of poisoning.

Keywords: *Poisoning Cases; Secondary Care Hospital; Ras Al Khaimah*

Introduction

A poison is any substance which if introduced in the human body could deteriorate health or cause death. Death from poisoning was initially due to all the naturally occurring poisons like venoms of insects, toxins from plants and heavy metals. Due to industrialization, there has been a new scope of humans being affected by different kinds of poisons, being pharmaceutical entities, which have been increasing every year in numbers [1]. In spite of there being a number of new advances in medical technology, acute poisoning due to various chemicals, drugs and toxins remains to be a serious public health problem [2].

The number of poisoning cases have been increasing worldwide lately. In 2015, 2.2 million cases of poisoning have been reported in the USA, where 1 poison exposure was reported to the poison call center every 15 seconds. This accounted for 6.7 poison exposures per every 1000 people. Poisoning cases in children were also seen to be around 41.9 exposures per every 1000 children. The most common exposure in adults were seen due to pain medications followed by sedatives antidepressants, and cardiovascular medications. Whereas, in children the most common exposures were seen due to personal care products and cosmetics [3].

Poison statistics in India claim to have around 50,000 deaths every year due to poisoning. In a study conducted in India in a tertiary care hospital found that of all the medical cases registered 40% were poisoning related. Most of the poisoning cases were found to be intentional and predominantly in males between the ages of 20 - 30 years. The main cause of poisoning found to be was insecticides followed by snake poison [4]. According to Health Authority of Abu Dhabi statistics, injuries are the second leading cause of death and poisoning (11.3%) was also the second leading cause of those injuries [5].

A study conducted in Oman to determine the annual rate of poisoning cases observed in the accident and emergency department of Sultan Qaboos University Hospital in Oman. It was a prospective study conducted over 4 years. The results recorded 204 patients who were admitted with poisoning and the main source of poisoning was therapeutic agents predominantly analgesics (50% of all cases), which were mainly intentional followed by industrial and environmental agents (25%) and animal poisoning (14%) being the least. The rate of admittance was 148 patients out of 204, being admitted for 1 to 175 days [6].

Another study conducted in Al Qassim region of Saudi Arabia; researchers stated that they observed an increase in the number of acute poisoning cases from 66 to 114 from 1993 to 2003. The most common source was pesticides followed by analgesics (paracetamol) [7].

In the Middle East region, poisoning cases rank 40th among the leading causes of death. A retrospective cross-sectional study was conducted in the emirate of Dubai in United Arab Emirates which included 163 poisoning cases, having most patients in the age group of 20 - 29 years. Majority of the patients were poisoned with drugs followed by chemicals. Average length of hospital stay was 8 days and 3 patients died during their course of treatment [8].

A study conducted in UAE on unintentional poisonings in children showed that household chemicals and medicines were the main cause of poisoning and analgesics and antihistamines were the predominant medicines [9]. According to a prospective observational study conducted in two hospitals of Ras al Khaimah, a total of 97 poisoning cases were found to have majority of accidental poisoning. Among them, drug poisoning was the most predominant type of poisoning and paracetamol being the most common drug. Majority of the patients recovered, and no mortality was observed [10].

As the population in the UAE comprises of residents originally from innumerable cultural backgrounds, there are lot of different ethnicities and a large range of age-groups involved. Over the past years most studies in the UAE provided very limited data about the incidence, type of agents, severity, treatment and outcome is insufficient. This necessitates the need for a clear profile of frequently used toxic products and the outcome of using these products. Moreover, it is equally important to possess a comprehensive epidemiologic information on the different types of poisoning across the entire region.

Methods

This study was a Prospective observational study including patients admitted to the emergency department of the Ibrahim bin Hamad Obaidallah Hospital, Ras Al Khaimah, U.A.E. This study was conducted for a period of seven months from October 2017 to May 2018. Sample size was calculated using convenience sampling technique. Approximately 75 adult patients diagnosed with any form of poisoning caused due to drugs, chemicals, heavy metals, environmental agents household products were enrolled in the study. Patients below 13 years of age and food poisoning cases were not included in the study. Poisoning cases were identified by visiting the emergency department on a regular basis. Demographics of each patient and specific patient data like complaints on admission, medical, medication, social and family history, previous allergies, type of poisoning, provisional and final diagnosis, routine investigations, urine analysis, poison details, drug treatment report and progress report were collected through electronic medical records. The data collected was analyzed for various parameters such as: incidence of poisoning, demographics status of patient, type of agents, the reason of poisoning, management and severity. The severity scales used were poison severity score and snakebite severity scale. The collected data was summated and

then transferred on a Microsoft excel sheet and the results were analyzed for various parameters: incidence of poisoning, demographics status of patient, type of agents, reason of poisoning, management and severity for statistical significance using the SPSS Version 24.0. Chi-square was used to assess the association between the demographic and treatment related variables. Odds ratio was done to assess the relationship between demographics and treatment variables. A p-value of less than 0.05 was considered statistically significant.

The study was approved by Ras Al Khaimah (RAK) Medical and Health Sciences University Research and Ethics Committee (Number: RAKMHSU REC 5-2017-PG-P) and RAK Research and Ethics Committee (RAK REC 37-2017-PG-P), UAE.

Results

The study included 75 patients who were admitted to the emergency department of the IBOH. It was noted that majority 42 (56%) of the patients were males and remaining 44% of the patients were females. It was found that 36% (n = 27) of the patients belonged to the age group 21 - 30 years followed by 20% (n = 15) of the patients belonged to the age group 31 - 40 years. Good percentage of the acute poisoning cases were documented in Emirati nationals [30 (40%)] followed by other nationalities [14 (19%)] like Portuguese, Egyptian, Palestinian and Nepalese. Majority of the study population were married [28 (37%)].

Among the screened patients a total of 14 (18.6%) of the patients had significant past medical history. The most common medical condition documented was diabetes mellitus [3 (21.4%)]. The mean total number of durations of stay of the study patients was 1.8 + 1.0 days with minimum of one day to maximum of six days. Majority [35 (46.67%)] of the patients were admitted for one day followed by 23 (30.67%) of the patients were admitted for two days. It was found that majority [39 (52%)] of the patients were accidentally or intentionally poisoned at their home followed by 20, (27%) of the patients who were poisoned at the other locations (recreational areas like the beach, park and mountains).

Study patients were analyzed according to their intention of poisoning and were grouped into accidental or unintentional and suicidal or intentional poisoning. It was found that in majority [46 (61.3%)] of the cases, the intention of poisoning was suicide and while in [29 (38.7%)] of the patients it was accidental. Majority [19 (25.3%)] of the patients were brought to the hospital 2 - 4 hours after the exposure to the poisoning agent/poison followed by [17 (22.6%)] of the patients were brought to the hospital within two hours after exposure to the poison. It was found the [41 (55%)] of patients were poisoned due to drugs followed by [14 (19%)] of patients who were poisoned by snakebite. Among the 41 (55%) of the patients poisoned due to drugs, a total of 15 (36.5%) of the patients were poisoned by paracetamol followed by 12 (29.2%) of the patients consumed a cocktail of medications (mixture of NSAIDS and mixture of sedatives and NSAIDS). Most patients [73 (98%)] recovered and did not face any serious complications.

With reference to severity of poisoning 54 (82%) of the patients were graded minor on poison severity scale. Patients who presented with snake bite were assessed using snake bite severity scale and all snake bite cases were found to be of grade 1 severity.

Different poisoning cases were managed differently depending on the nature of the poison. Nine (64.2%) patients with snake bite were managed with anti-venom (crotalidae) polyvalent whereas, six (40%) patients with paracetamol poisoning were managed with acetyl cysteine and supportive medications. There was a significant association ($p < 0.05$) between gender ($p = 0.007$), age ($p = 0.001$) marital status ($p = 0.001$) and poisoning agent and there was a significant association ($p < 0.05$) between gender ($p = 0.001$, age ($p = 0.036$) and type of poisoning agent. Further a multivariate binary logistic regression analysis was done to identify the definite predictors associated with intention of poisoning and with types of poisoning agent (drug). It was noted that female gender ($p = 0.036$; OR 0.902273; 95% CI = (0.081 - 0.918), < 30 years of age ($p = 0.001$; OR = 8.009; 95% CI = (2.30 - 28.07) were significant predictors of intention of poisoning and with types of poisoning agent (drug).

Discussion

The present study was conducted at Ibrahim Bin Hamad Obaidallah Hospital (IBOH) Ras Al Khaimah. IBOH is a secondary care hospital where all patients above the age of 13 years are admitted. The poisoning cases were identified from the emergency department in IBOH in line with the inclusion and exclusion criteria. The cases were recorded with the use of the electronic medical record system. Prevalence of poisoning was higher in males compared to females. In accordance with our observation, various studies have reported male predominance over female. In these studies, the percentage of males ranged from 52% -71% [9-14]. However, studies conducted by Shrestha B (61.8%) and Rajasuriar R., *et al.* (55.1%) documented a prevalence among the female population. The difference in gender predominance could be due to variations in geographical area and the accessibility of the poisoning agent. It was found that the age group 21 to 30 years was the most predominant age group. This could be due to work related stress and personal/marital problems in this age group. Another study also concluded that two thirds of the patients were of the age group 21-30 years [9,11]. Most patients in our study were Emirati in nationality which could be due to the location and type of hospital which caters to the needs of the local population. In the present study, higher rate of intentional poisoning was observed, compared to unintentional poisoning. These results are in accordance with the findings of other studies who also reported the numerousness of intentional poisoning over unintentional poisoning. They range from 52 -85% of cases with intentional poisoning [9,10,15].

Among most of the cases that were admitted to the emergency department the length of their hospital stay was one day. This can be attributed to the low severity grade of the poisoning cases and also because most patients were managed quickly, which contributed in early discharge. Some patients with complications were either labelled as 'LAMA' (Leave against medical advice) or were transferred to other hospitals. Pharmaceutical agents were the most common source for poisoning in our study. A higher rate was observed in females when compared to males. Among these therapeutic agents it was found that paracetamol followed by a cocktail of medications were most frequently predominant. Some studies have reported to have found that paracetamol was the usual agent responsible for many poisoning cases [11,16,17].

Snakebite was reported mainly in males who work in fields or farms. There were no serious complications documented among patients who were diagnosed with snakebite poisoning. The reason for this could be that most snakes found in the city of Ras Al Khaimah are not poisonous type. It was observed in a report that in the UAE, seventeen species of snakes have been identified during the past 40 years [18].

From the study, management of the poisoning was a crucial factor, which would determine the outcome of the patient. It was seen that patients with paracetamol poisoning were managed with acetylcysteine and supportive medications like: Pantoprazole, IV fluids and metoclopramide. A study suggests that 60% of patients who are not administered the antidote acetylcysteine having paracetamol levels above the treatment line usually develop liver damage [19]. Patients with snakebite poisoning were mostly managed with anti-venom (crotalidae) polyvalent, this was administered to patients who reported with non-poisonous snakes and bites from other sources like scorpions and other insects [20].

The multivariate analysis pointed that female gender and < 30 years of age were significant predictors of intention of poisoning. Although worldwide it is seen that most males commit suicides which lead to death but most women make more of suicide attempts, this is known as the gender paradox [21]. Another study was consistent with our findings proving that women were most likely to commit suicides [22].

Following the management of various poisoning cases, the outcome of most patients was assessed to be 'recovered' and no mortality was recorded. The reason for this could be because on the poison severity scale most patients were reported to have a 'minor' score. In contrast to these findings, some studies have reported mortalities due to different poisoning cases [9,23-25].

Conclusion

From the following study we can conclude that, the most prevalent type of poisoning was due to pharmaceutical agents and intention of poisoning was suicidal. The study provides a clear picture in terms of demographics showing that UAE nationals were among the most patients poisoned, and furthermore highest rate was recorded in the age group of 21 to 30 years. The present study emphasizes the need of creating awareness among the general public regarding suicides. More people must be encouraged to visit a psychologist when required. Patients must be educated regarding the safe usage of over the counter medications and household products. Pharmacist can contribute in greater way in educating the general public regarding first-aid, appropriate labeling, storage and disposal practice of medicines and hazardous household products. Lastly, this study provides a platform for to direct more research towards the field of toxicology in the UAE as this will help provide us with a broader scenario and a better understanding of the poisoning cases in UAE.

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