Evaluation of intoxicated patients hospitalized in a newly-opened level two pediatric intensive care unit

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Abstract

Aim: The study aimed to retrospectively examine the demographic and etiological characteristics, prognosis and length of stay in intensive care unit of intoxicated patients hospitalized in Level two Pediatric Intensive Care Unit in Maternity and Child Health Hospital of Samsun.

Material and Methods: The study retrospectively examined the records of patients hospitalized between 14th March 2014 and 14th March 2015 in Level two Pediatric Intensive Care Unit in Maternity and Child Health Hospital of Samsun with respect to age, gender, cause of poisoning, time of emergency department admission, length of hospitalization and prognosis.

Results: Of 82 patients admitted to the Intensive Care Unit, 29 (35.3%) were male and 53 (64.6%) were female. The mean age of the male and female patients was 7.89 ± 6.3 years and 11.2 ± 5.7 years, respectively and the mean age of the study group was 10.04 ± 6.1 . Twenty one (39.6%) of the female patients were at the age group of 0-14 years and 32 (60.4%) were at the age group of 14-18 years. Twenty (68.9%) of the male patients were at the age group of 0-14 years and nine (31.1%) were at the age group of 14-18 years. The cause of poisoning was drug intoxication (antidepressants, antibiotics, painkillers and other drugs) in 64 patients (78%) and the remaining 18 patients (22%) were admitted to hospital for other causes (rat poison, mushroom, carbonmonoxide, scorpion stings, bonzai and pesticides). Thirty eight (46.3%) of all the patients used such substances for suicidal purpose. Thirty three (62.2%) of these were female and 32 were at the age group of 14-18 years. Forty (48.7%) of the patients who ingested medication ingested one drug, while 24 (29.2%) ingested multiple drugs. Antidepressants were found to be the most commonly used drugs (31.2%). The mean hospital admission time was 3.41 ± 2 hours and the mean time of intensive care unit stay was 2.89 ± 1.04 days. No mortality was recorded. Thirty patients (36.5%) were referred to the Pediatric Psychiatric Unit as outpatients after discharge and three patients (3.6%) were referred to Alcohol and Substance Abuse Treatment and Research Centre.

Conclusions: Because the rate of drug intoxication was found to be substantially high in this study, we think that politics related with education of parents on this issue, packaging of drugs in such a way that children can not open these packages and drug supply should be reviewed. (Turk Pediatri Ars 2016; 51: 35-9)

Keywords: Pediatric intensive care, drug intake, suicide, poisoning

Introduction

Intoxication is occurrence of some signs and symptoms in the organism following intake of a poisonous or nonpoisonous substance by different routes and at high doses. Although intoxications may be observed in all age groups, they occur more commonly in children and have a more fatal course (1).

The most common agents causing to acute intoxication in Turkey include drugs (analgesics, antidepressants, antihistaminics, antihypertensives, antiepileptics etc.), pesticides and insecticides (organophosphate, carbamate, pyrethrin group etc.), household chemicals (bleach, drain opener, descaling agent, detergents, naphthalene etc.), poisonous gases (carbonmonoxide,

choking gases), other chemicals, plant and food (fungi, indoor plants, fish, rhododendron honey, apricot kernel etc.) and bites by poisonous animals (scorpion, snake, spider, bee etc) (2). In a study conducted in 1997 based on 38 healthcare institutions from all regions of Turkey, 5077 pediatric cases of intoxication were evaluated and it was found that these cases constituted 0.9% of the total number of emergency cases (3).

High mortality rates related with intoxications especially in developing countries including Turkey have rendered pediatric cases of intoxication a significant problem which should be solved rapidly (4). In our hospital, patients who present to the emergency department with intoxication are followed up and treated following hospitalization in our level two Pediatric

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Intensive Care Unit if a life-threatening situation is present considering the poisonous substance, clinical and laboratory findings of the patient and the recommendations of the National Poison Information Center. The aim of this study was to determine the demographic and etiological characteristics of the cases of intoxication followed up in our newly opened unit for a period of one year and to retrospectively examine the disease prognosis and length of stay in the intensive care unit.

Material and Methods

The patients who were internalized in level two Pediatric Intensive Care Unit in the Maternity and Child Health Hospital of Samsun because of intoxication between 14th March 2014 and 14th March 2015 were examined retrospectively. Informed consent was obtained from the parents of all patients who were hospitalized in the intensive care unit. Ethical approval was obtained from the Samsun Province Public Hospitals General Secretarial Ethics Committee for the study (number:54103609/622.02). Data belonging to the patients were obtained from the patient files and computer information systems. Patients who have ingested drugs at toxic doses, all cases of fungus and pesticide intoxication and intoxicated patients who have poor clinical status and for whom intensive care unit follow-up is recommended by the National Poisoning Information Center are admitted in the Pediatric Intensive Care Unit. The age and gender distributions of the patients, the substances which caused intoxication, the time of presentation at the emergency department following the event, hospitalization durations in the intensive care unit and prognoses were evaluated.

Statistical analysis

SPSS (Statistical Package For Social Sciences for Windows v. 22.0 SPSS Inc.; Chicago, IL, USA) program was used for statistical evaluation. The data were expressed as numbers and percentages.

Results

Eighty two patients were admitted in level two Pediatric Intensive Care Unit in the Maternity and Child Health Hospital of Samsun because of intoxication between 14th March 2014 and 14th March 2015. This figure constituted 46% of all patients admitted in the intensive care unit. Twenty nine (35.3%) of the patients were male and 53 (64.6%) were female. The mean age of the females was 11.2 ± 5.79 years and the mean

age of the males was 7.89 ± 6.3 years. The mean age of all patients admitted in the intensive care unit was 10.04 ± 6.15 years. Twenty one (39.6%) of the females were aged between 0 and 14 years and 32 (60.4%) were aged between 14 and 18 years. Twenty (68.9%) of the males were aged between 0 and 14 years and 9 (31.1%) were aged between 14 and 18 years. Sixty (73.1%) of the patients presented to our hospital directly and 22 (26.8%) were referred from other hospitals. The mean time of presentation to our hospital was found to be 3.4 ± 3.03 hours (median: 2 hours, minimum: 30 minutes maximum: 16 hours). Drug intake with the aim of suicide was found in 38 (46.3%) patients. Thirty three of 53 females (62.2%) ingested drugs for the aim of suicide, while only five (17.2%) of 29 males ingested drugs for the aim of suicide. In the females, 32 of 33 suicide attempts occurred between the ages of 14 and 18 years. In addition, the total number of female patients in the age group of 14-18 years was 32. The mean time of hospitalization in the intensive care unit was 2.89 ± 1.04 days (median: 3 days, minimum: 1 day maximum: 5 days). Sixty four (78%) of the patients were intoxicated with drugs, while 18 (22%) were intoxicated by other substances (Table 1). Forty (48.7%) of the patients were intoxicated with a single drug, whereas 24 (29.2%) were intoxicated with multiple drugs. The most common drugs ingested were antidepressants and these were followed by antibiotics, analgesics and antipsychotics. The other cases included intoxication with rat poison (five patients), fungus poisoning (three patients), bonzai intoxication (three patients), pesticide intoxication (three patients), carbonmonoxide poisoning (two patients) and scorpion bite (two patients). Fourteen of the patients (17%) had an additional comorbidity. Nine of these 14 patients were being followed up with a diagnosis of depression, three were being followed up with a diagnosis of substance addiction and two were being followed up with a diagnosis of familial Mediterranean fever. Two of the patients were hospitalized in the intensive care unit for the second time because of suicide attempt. The patients who were intoxicated and hospitalized in the intensive care unit presented to hospital most commonly because the parents or a family member noticed ingestion of a drug or chemical substance and because of tendency to sleep. The mean Glasgow coma score at the time of presentation was 13.4 ± 1.3 . None of the patients was lost. All patients interviewed with a psychologist. Thirty patients (36.5%) were referred to the Psychiatry Outpatient Clinic and three patients (3.6%) were referred to AMATEM (Alcohol and Substance Abuse Treatment and Research Center).

Table 1. Distribution of the cases of intoxication by agent

Agent of intoxication	n	%
Drug	64	78.04
Rat poison	5	6.09
Fungus	3	3.65
Bonzai	3	3.65
Pesticide	3	3.65
Carbonmonoxide	2	2.43
Scorpion bite	1	1.21
Snuff	1	1.21
Total	82	100

Discussion

Intoxications in the pediatric age group are among significant causes of morbidity and mortality. About 40% of all cases of intoxication are drug intoxications (5). The ratio of pediatric patients presenting to emergency departments because of intoxication to all emergency cases and the ratio of drug intoxications to all intoxication cases varies from country to country and even from region to region in the same country (6, 7). It has been stated that approximately 2,2 million people are intoxicated in USA each year and 1,5 million cases of intoxication are pediatric cases (8).

In this study, only intoxicated pediatric patients hospitalized in the intensive care unit were investigated and it was found that intoxicated patients hospitalized in the level two pediatric intensive care unit in one year constituted 46% of all cases. In the study of Muhammedoğlu et al. (9) conducted in a newly opened adult intensive care unit in 2014, it was found that 50% of the patients followed up in intensive care unit in two years were intoxication cases and they associated this high rate with the fact that they gave service as if they were level one intensive care unit for the first six months. In the study conducted by Aşlıoğlu et al. (10) in 2011 in a level three pediatric intensive care unit, it was reported that 22% of the cases were intoxication cases, whereas Orhan et al. (11) reported that 16.7% of the cases were intoxication cases in a study they conducted in 2012 in a pediatric intensive care unit. Since our unit is a level two pediatric intensive care unit, the number of intoxication cases is higher compared to the other units. In addition, 26,8% of our patients had been referred from other healthcare institutions and this rate is substantially high for a unit with six beds. In the study conducted by Özayar et al. (12) in 2011,

it was reported that 74,4% of intoxication cases related with suicide attempt were female and these cases clustered in the period of adolescence. Again, Gündüz et al. (13) found that 77% of intoxication cases related with suicide attempt were female in their study. Since the data related with patients aged up to 18 years were included in this study, it was found that the intoxication cases related with suicide attempt clustered in the age group of 14-18 years similar to the results of Özayar et al. (12) and the girls in this age group who were intoxicated had ingested a substance to commit suicide.

The reasons for the high rate of suicide attempt in female adolescents include different values and roles given to female and male adolescents within the family in communities like ours, the fact that female adolescents are more dependent to family compared to males during this period and they face with family problems with a higher rate because they have more responsibility within the family (14). The community and families have significant responsibilities in this issue. In addition, physicians should make patients and families receive psychological assistance in cases of intoxications related with suicide attempt especially in the adolescence and thus reduction of recurrent suicide attempts should be targeted.

In this study, most of the intoxication cases were found to be drug intoxications. The most common drug intoxication was found to be antidepressant intoxication and this was followed by antibiotics and analgesics. While antidepressant and antibiotic intake were in the first order in adolescents, analgesic intake was in the first order in younger children. In our country, many drugs including antidepressants can be purchased without prescription. Easy access to these drugs should be prevented by legal arrangements, families should be educated about drugs and their potential harms and the importance of keeping drugs out of reach of children should be emphasized. In the study of Özayar et al. (12), it was reported similarly that antidepressants were in the first order among drug intoxications with a rate of 31.9% and this was followed by analgesics with a rate of 17.02%. When the literature was examined, it was found that analgesics in some studies and antidepressants in some others were in the first order (15-21). In contrast to these studies, the rate of antibiotic intoxication was also found to be substantially high in our study. Therefore, physicians should pay attention to rational antibiotic use and families should be informed about accurate usage in conditions where use of antibiotics is necessary.

Rat poison intoxication was in the first order among non-drug intoxications. According to the data of our country, drugs are in the first order among acute intoxication agents, household chemicals are in the second order and pesticides and insecticides are in the third order (22). The data of this study are compatible with the data of our country.

In this study, the patients who were intoxicated and hospitalized in the intensive care unit presented to hospital most commonly because the parents or a family member noticed ingestion of a drug or chemical substance or because the child himself/herself informed that he/she had ingested a drug or chemical substance. The most common symptom at presentation was stupor and this was followed by nausea and dizziness.

The most common comorbidity in our patients was depression and all patients with a diagnosis of depression were in the age group of 14-18 years. These patients ingested their own drugs for the aim of committing suicide. In the study of Ak et al. (23) in which 620 cases of suicide attempt were examined, it was found that the diagnosis of depressive disorder was the most common diagnosis with a rate of 48.3%. This may be explained with the increase in tendency to depression in the adolescence (24).

In this study, it was found that the patients presented to hospital a mean period of 3.4 hours after the event. In the study of Karcıoğlu et al. (25), it was found that the patients most commonly presented to hospital in the first two hours. In the study of Özayar et al. (12), the mean time of presentation to emergency department was reported to be 4.4 hours. Parents should be educated to shorten the time of presentation to emergency department, because the importance of urgent intervention in acute intoxications is clear.

The lengths of stay in intensive care unit were found to be similar to the literature in this study (12, 26, 27). No patient was lost. Dialysis or mechanical ventilation was not initiated in any patient. The mortality rate was reported to be 0,9% in the study of Özayar et al. (12) and 0,8% in the study of Pınar et al. (28).

In this study, the intoxication cases of our newly opened Pediatric Intensive Care Unit in a one year period were reviewed and it was attempted to specify regional characteristics. Pediatric intoxication cases constitute a significant portion of level two pediatric intensive care admissions. Since the hospital where this study was conducted is a district hospital, we think that the data obtained will contribute to the fund of knowledge re-

lated with the distribution of intoxication cases in our region and the measures which should be taken. The fact that the rate of drug intoxications was substantially high suggested that measures should be taken primarily in this issue. We think that most intoxications can be prevented with reevaluation of drug politics by the government and with education of families.

Ethics Committee Approval: Ethics committee approval was received for this study.

Informed Consent: Written informed consent was not obtained from patients due to the retrospective nature of this study.

Peer-review: Externally peer-reviewed.

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