

Annual Evaluation of “Drug Poisonings, Emergency Service” Studies Published in Pubmed 01.01.2019-01.01.2020

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Abstract

Aim: This study aimed to evaluate studies on drug poisoning and emergency services published in PubMed between January 2019 and January 2020.

Materials and Methods: The literature review was carried out using the terms “drug poisoning and emergency medicine” in PubMed (<http://www.ncbi.nlm.nih.gov/sites/entrez>) January 2019 and January 2020. All summaries defined in the searches were reviewed, and suitable studies were selected.

Results: Eighty-five studies were identified in PubMed between January 2019 and January 2020. 28.24% (24) of these studies are retrospective, prospective, and cohort studies and meta-analyses. 56.47% (48) were original studies, of which 20.83% (20) were on narcotic poisoning (opioid, synthetic cannabinoids, cannabis, and heroin), 8.33% (4) were on overdose paracetamol poisoning, 8.33% (4) were on allergic reactions due to drug use, 6.25% (3) were on acute alcohol poisoning, and 56.25% were other original studies. Studies on treating intoxication complications were 15.29%.

Conclusion: According to this annual evaluation, the most common studies on applications in emergency departments and poison centers were original articles on drug poisoning, 56.47%. Retrospective, prospective, and cohort studies and meta-analyses were 28.24%, and studies on the treatment of complications resulting from drug poisoning were 15.29%.

Keywords: Drug poisonings, emergency service, clinical toxicology

Introduction

Poisoning is an important public health problem that causes a major portion of emergency department (ED) admissions and may cause serious consequences to health (1,2). The demographic characteristics of poisoning cases differ in terms of regions and socioeconomic factors (3).

Poisoning events are generally; the use of prescription or non-prescription medication initiated by the patient occurs due to iatrogenic administration of high doses of drugs, accidental exposure to chemicals, or deliberate intake of biological agents for suicide (4). Medicinal drugs are the most encountered (47-86%) agents in poisonings.

Among medicinal drugs, paracetamol, nonsteroidal anti-inflammatory and antidepressants are mostly seen (5-7). Preventable adverse drug events (ADEs) are a common cause of ED visits, hospitalizations and death (8,9). ADEs cause or contribute to one in nine ED visits, and of deaths attributed to medical care, medications are the most common cause (10-13).

Our aim in this study is to evaluate the “drug poisonings and emergency service” studies published in Pubmed between 01.01.2019 and 01.01.2020.

Materials and Methods

The literature review was carried out using the terms “drug poisoning” and “emergency medicine” in PubMed (<http://www.ncbi.nlm.nih.gov/sites/entrez>)



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www.ncbi.nlm.nih.gov/sites/entrez) between 01.01.2019 and 01.01.2020. All summaries defined in the studies were reviewed and suitable research selected for later review. Toxicity studies; applications to the University Hospital Adult Emergency Service, National, Regional Poison Centers and Poison Control Centers are selected. IBM SPSS version 20.0 program was used for statistical analysis.

Results

Eighty five studies were identified in Pubmed between 01.01.2019 and 01.01.2020 with the keywords “drug poisoning and emergency service”. 28.24% (24) of these studies are retrospective, prospective, cohort study, meta-analysis, 56.47% (48) original study and 15.29% treatment of complication (Table 1).

20.83% (10) of 48 original studies narcotic poisoning (opioid, synthetic cannabinoids, cannabis, heroin), 8.33% (4) overdose paracetamol poisoning, 8.33 (4) drug-related allergic reactions, 6.25% (3) acute alcohol poisoning, 56.25% (27) are other original studies (Table 2).

Some of the other original studies 56.25 % (27) “clinical toxicology of beta-blocker overdose in adults, acute deliberate salicylate toxicity, valproic acid toxicity, treatment of caffeine toxicity with metoprolol, central nervous system toxicity due to mefenamic acid, accidental mercury poisoning, the effects of amiodarone prophylaxis on cardiac dysrhythmia in acute aluminium phosphide poisoning, toxic epidermal necrolysis induced by allopurinol, deliberate self-poisoning with a lethal dose of pentobarbital, acute alcohol co-ingestion and hospital-treated deliberate self-poisoning” and similar cases.

15.29 (13) of 85 studies identified in Pubmed as a result of screening are studies to treat complications from poisoning. Some of those; antidote, intravenous lipid emulsion (ILE) therapy in fatal overdose cases, antidotal use of physostigmine for its treatment, the role and effect of brain computed tomography in drug treatment and guidance recommendations, Drug **Compliance Check:** To support drug surveillance clinical rules by applying advanced pharmacotherapy (Table 3).

Table 1. Distribution of poisoning studies types

Types of poisoning studies	n	%
Retrospective, prospective, cohort studies, meta-analyzes	24	28.24
Original studies	48	56.47
Treatment studies of complications	13	15.29
Total	85	100
n: Number		

Table 2. Distribution of poisoning original studies

Type of original studies	n	%
Narcotic poisoning (opioid, synthetic cannabinoids, cannabis, heroin)	10	20.83
Overdose paracetamol poisoning	4	8.33
Allergic reactions due to drug use	4	8.33
Cases of acute alcohol poisoning	3	6.25
Other original studies	27	56.25
Total poisoning studies	48	100
n: Number		

Table 3. Distribution of treatment studies of complications

Treatment studies of complications	
Antidote; Pharmacologist requires emergency doctors and toxicologists to work together	
Lipid emulsion (ILE) therapy in fatal overdose cases	
Antidotal use of physostigmine for its treatment	
The role and effect of brain computed tomography in drug treatment in drug treatment	
“Drug Compliance Check” (CMA): To support drug surveillance clinical rules by applying advanced pharmacotherapy	
Total studies	13

Discussion

Drug poisoning can be either intentional or unintentional and occurs in both young adults and elderly people. Unintentional drug poisoning occurs more often than intentional drug poisoning. Whereas in young adults, the majority of drug poisoning cases is intentional (14-17).

In our study, 85 studies were identified in Pubmed. 28.24% (24) of these studies were retrospective, prospective, cohort studies, meta-analysis, 56.47% (48) original study, and 15.29% complication treatment studies. Some of those; emergency management of deliberate self-poisoning (DSP) by drug overdose is common in emergency medicine. 48 hours cross-sectional study was carried out in 319 emergency medical service (EMS) and emergency services in France. Data from 703 patients (median age was 43 and men was 40%) were analyzed. One hundred and fifteen (16%) patients were attended by an EMS physician. These patients had more severe poisoning as suggested mainly by a lower Glasgow Coma Score and a higher rate of admission to an intensive care unit (18).

Over-the-counter analgesics are often used in suicide attempts. After the suicide attempt between 2009 and 2010 in Montreal, a cross-sectional study using the graphic examination of all individuals who applied to the emergency room of two adult general hospitals. Substances most frequently used were acetaminophen (30%), antidepressants (37%), anxiolytics (30%), opioids (10%), and anticonvulsants (9%) among prescription drugs, and cocaine (10%) among recreational drugs. Accessibility, toxicity and large amounts of unsupervised intake can be facilitators (19).

In a quantitative approach with data analysis of drug-related intoxication cases at the Poison Control Center University Hospital at Londrina State University in Brazil, the data were collected from the service notification records for the period 1985-2014. There was a trend for a higher proportion of cases of drug-related poisonings in males. Also, there was an increased trend towards cases involving analgesics/anti-inflammatories/immunosuppressants, antidepressants and antipsychotics (20).

Acetaminophen (APAP) poisoning, remains a leading cause of morbidity and mortality in developed countries. Time APAP is one of the most commonly used analgesics. The world can result in overdose hepatic injury and death antidotal treatment is delayed. For over 40 years, risk stratification decisions regarding antidotal treatment with N-acetylcysteine have been guided by the Rumack-Matthew nomogram (the nomogram). In a retrospective database analysis, changing nomogram risk zone classification with serial testing after acute acetaminophen

overdose. Half of patients after acute APAP overdose cross nomogram risk areas, the current treatment threshold 150 mg/mL 4 hours after swallowing. Old age, male sex, independently of co-ingestants and final liver damage It is associated with a patient who moves to higher-risk areas (21).

Salicylate poisoning is a serious toxicologic problem with a complex pathophysiology. At the start of the session, teams received a 10-minute introduction to the activity. Upon entering a room in a simulated ED, teams had 15 minutes to complete a focused history and physical exam of the patient, interpret arterial blood gas and basic metabolic panel data, and administer treatment based on key findings and a presumptive diagnosis. This simulation exercise was successful in exposing students to the clinical presentation of salicylate toxicity and giving them the opportunity to apply and synthesize basic science knowledge during the scenario (22).

In a retrospective study examining the clinical toxicology of beta-blocker overdose, there was no significant difference in the severity of poisoning among beta-blockers in adults. No deaths were observed in case of overdose beta-blockers and single dose exposure. Other antihypertensives, sedatives or alcohol should be used with caution, and it is stated that death can develop (23).

In the systematic review incidence of mortality due to rebound toxicity in prehospital opioid overdose care: Mortality or serious adverse events in the included studies due to suspected rebound toxicity in patients treatment with naloxone was rare. There was very limited evidence available reporting on adverse events (24).

In retrospective study to assess the association of pregabalin misuse with use of other sedatives and with suicidal self-harm; to compare the characteristics of pregabalin misuse-related harms in people who misuse pregabalin according to whether or not they also used other sedatives. Rates of pregabalin misuse-related ambulance attendances have increased markedly over the past 6 years. Caution is required when prescribing pregabalin for people taking other sedatives. Limiting the dispensing of this drug may reduce the risks associated with its misuse (25).

Cyproheptadine is a serotonin and histamine antagonist that has been suggested as a treatment for serotonin syndrome. An 11-year retrospective review of cyproheptadine use in serotonin syndrome cases reported to the California Poison Control System. The benefits of and indications for cyproheptadine are uncertain and questionable for the management of a serotonin syndrome. Future recommendations on its use should be based on diagnostic criteria, severity of symptoms and management in conjunction with other supportive measures (26).

In another retrospective cohort study acute alcohol ingestion and when the effect of self-harm was examined in patients treated intentionally with self-poisoning. There was no significant relationship between the coingestion of alcohol in an index DSP and subsequent repeated or suicide (27).

Little is known about the relative harms of edible and inhalable cannabis products. In an observational study examining acute diseases associated with cannabis use by exposure route, visits attributable to inhaled cannabis are more frequent than those attributable to edible cannabis, although the latter is associated with more acute psychiatric visits and more ED visits than expected (28).

In this retrospective analysis of all cases of human exposures (intentional abuse, accidental and unknown circumstances, and suicide attempts) for the period 2002-2016. Poisoning due to substance abuse has changed significantly during the last few years. Therefore, developments of substance abuse reported to the Poisons Information Centre Erfurt were investigated and compared to other circumstances of human exposures during the last 15 years. Clinical significance of substance abuse is shown by the fact that it resulted more often in moderate and severe symptoms than suicide attempts (29).

A cross-sectional observational study examining drug treatment deficiencies as a reason for admission to the intensive care unit in a university hospital. The frequency of drug therapeutic failures in our study was similar to that described in the literature; being the most common cause the inappropriate drug use, particularly for drugs with complex kinetics, such as antiepileptic drugs (30).

Pharmacogenetic relationship between *NAT2* gene polymorphisms and hepatotoxicity from isoniazid: in meta-analysis study. Genetic variants of the *NAT2* gene, plays an important role in hepatotoxicity from isoniazid. Thus, *NAT2* genotyping, understanding of drug-enzyme metabolic capacity and helping early predisposition isoniazid-induced hepatotoxicity (31).

Urinary Drug Screening in Acute Drug Poisoning: A Prospective Cross-Sectional Study. In the treatment of patients suspected of acute drug poisoning, the patient's urine is usually performed. In Japan, using common screening kits at the point of care. They evaluated which kit was appropriate. In acute drug poisoning screening, the results are more useful compared to serum drug analysis results (32).

In a retrospective study, the examination of patient characteristics associated with taking home naloxone to an intensive, urban emergency room. Naloxone (THN) kits may be recommended for patients with an overdose of opioids. ED staff use illegal opioids

or use a serious overdose because you can potentially benefit from THN, but may miss others who are at high risk for the future, overdose. Hospital EDs, all eligible people Patients at risk of overdose can access THN (33).

In the observational retrospective cohort study, the electronic medical record data of geriatric patients and the safety of parenteral ketorolac use for analgesia management in geriatric ED patients were examined. The respiratory side effects of the central nervous system and opioids have been investigated with a varying approach to optimal ED pain management with opioids in the geriatric population outbreak (34).

In this study physostigmine and non-antidote treatment have been prospectively investigated in antimuscarinic therapy. Poison centers usually manage patients with antimuscarinic delirium. However, the discussion It surrounds the antidotal use of physostigmine for its treatment. This study provides further evidence of both the safety and efficacy of physostigmine in the treatment of antimuscarinic delirium (35).

Investigation of ILE therapy in fatal overdose cases in an observational study. Within the Association of Poison Control Centers National Poison Data System, hundreds of cases exist in which ILE therapy was given and death occurred. In many of these cases, ILE was given prior to cardiovascular collapse. Although there is some suggestion of transient improvement in a small subset of cases, adverse effects are also reported. When taken in totality, the number of published cases of failed lipid emulsion therapy outnumbers the published instances of ILE success. Given all the uncertainty generated by case reports, the evaluation of the role and efficacy of ILE therapy in non-local anesthetic poisoning needs robust controlled clinical trials (36).

In the study examining the development and characteristics of the Overdose Cohort in British Columbia Canada, hospitalization, doctor visits, poison center and ambulance overdose cases, emergency visits and forensic data were recorded. It is available from multiple sources. 10,456 people were overdosed by 14,292 from January 1, 2015 to November 30, 2016. In ambulance records, only 28% of overdose events were found in multiple data sets of the highest cases (32%). Compared to fatal overdoses, non-fatal events more frequently included women, young individuals (20 to 29 years old) and those 60 or older. 78% of illicit drug deaths had no associated ambulance response. In the year before the first overdose, 60% of individuals had at least one ED visit, 31% had at least one hospital visit, 80% had at least one doctor visit, and 87% had at least one visit in a community pharmacy. It was observed that he filled the prescription (37).

Conclusion

Preventable adverse drug events is an important public health problem that causes a major portion of hospital adult emergency service, national, regional poison centers and poison control centers admissions and may cause serious consequences to health.

Ethics

Ethics Committee Approval: Ethics committee approval is not obtained for studies conducted by examining the studies published in Pubmed.

Informed Consent: Informed consent is not made in studies using pubmed data.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: İ.H.H., N.G., Design: İ.H.H., N.G., Data Collection or Processing: İ.H.H., N.G., Analysis or Interpretation: İ.H.H., N.G., Literature Search: İ.H.H., N.G., Writing: İ.H.H., N.G.

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