DOI: 10.52544/2642-7184(2)2001
MedJEM

MENATOX 2020 CONFERENCE ABSTRACTS
Volume 2, Issue 2 (Special Issue)
MedJEM

Abstracts Presented at the
Middle East and North Africa Clinical Toxicology Association
Annual Conference
in Istanbul, Turkey
February 19 - 22, 2020

Edited by Hoffmann RJ, Kazzi Z, Alrewaili N, Alhatali B

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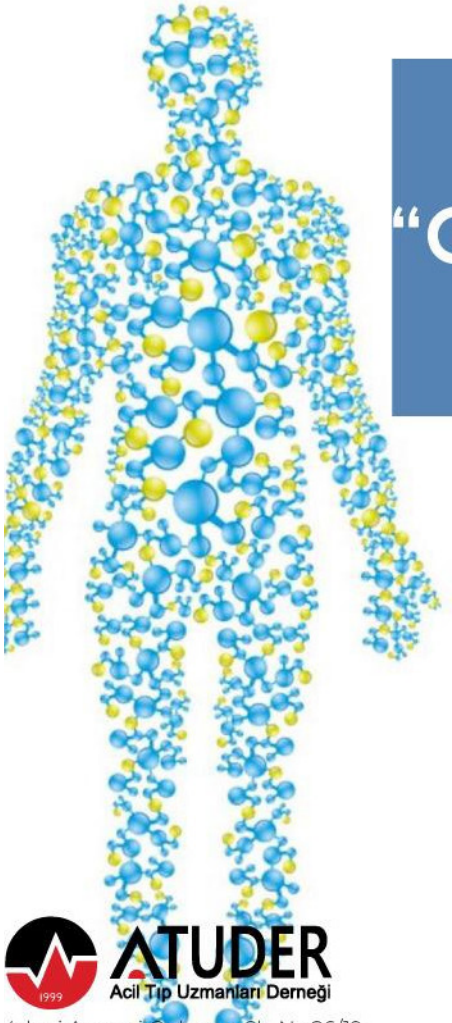

9th MENATOX "CLINICAL TOXICOLOGY" CONFERENCE

19 - 22 FEBRUARY 2020

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CATEGORY 1: ORIGINAL RESEARCH

1 Acetaminophen Poisoning Resulting from Repeated Supratherapeutic Ingestion: Circumstances and Outcome

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Objective: Acetaminophen is the most prescribed drug worldwide. Dangers related to repeated supratherapeutic ingestion (RSTI) of acetaminophen are still poorly known by the general population. Our aim was to report a case series of acetaminophen-poisoned patients resulting from RSTI admitted to the intensive care unit (ICU) and analyze the risk factors, the observed complications and the final patient outcome.

Methods: We conducted a retrospective single-centre observational study including all acetaminophen-poisoned patients with RSTI admitted to the ICU between 2008-2019. RSTI was defined as the ingestion of supra-therapeutic dosage (> 1g four times per day with minimum 6h intervals between two successive oral intakes) in the absence of any intent for self-harm and suicidal attempt, as assessed by a psychiatry consult.

Results: Twenty-two patients (65% females/35% males, age, 35 years [24-50] (median [25th - 75th percentiles]) were included. The total presumed ingested acetaminophen dose was 15 g [9- 31] taken during 24 hours [2-114]. The patients were admitted in the hospital with a delay of 48 h [24-132] after the first ingested acetaminophen dose. The initial symptoms included abdominal pain (45%) and vomiting (37%). The median values of all routine biological parameters were in the normal ranges, except AST106 IU/L [48 - 1915], ALT196 IU/L [44-1302] and prothrombin index 61% [38-80]. The serum acetaminophen concentration on admission was 12.0 mg/L [2.9 - 102.0]. Factors of individual vulnerability were identified in only seven patients (32%) who were chronic alcoholics. No patient was treated with cytochrome P450 inducer drugs and none was anorexic. All patients were immediately treated with N-acetyl cysteine. The observed complications included acute liver injury (88%), metabolic acidosis (27%), acute liver failure (23%), acute renal failure (23%) and death (14%, N = 3). Liver transplantation was not possible in these three patients due to delayed admission with multiorgan failure requiring prompt mechanical ventilation and high-dose norepinephrine infusion.

Conclusion: Acetaminophen RSTI may result in severe liver toxicity, life-threatening presentations and high-rate fatality. Since this RSTI-related acetaminophen poisoning is easily evitable, public information is essential to limit misuses.

2 Methemoglobin Levels of Patients Presenting to an Emergency Department of a Tertiary Care Hospital in Oman

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Objective: The objective was to describe the different levels of methemoglobin of patients presenting to the emergency department.

Methods: This was a retrospective data review study of patients from December 2017 to December 2018.

Results: We have analyzed data of 100 patients, of these 42 were males and 58 were females. The distribution of abnormal methemoglobin levels were: normal (methemoglobin levels: <2) in 65 (65%) patients, moderate abnormal (methemoglobin levels: 2-4) 27 (27%) of patients, and high abnormal (methemoglobin levels: >4) in 8 (8%) patients. Distribution of symptoms among patients with moderate abnormal methemoglobin level was: fever: 38%, shortness-of-breath: 24%, vomiting: 24%, and cough: 14%. The distribution of symptoms among patients with a high abnormal level of methemoglobin was as follows: fever: 43%, shortness-of-breath: 29%, vomiting: 14%, and cough: 14%. 28 out of 65 patients with normal methemoglobin levels had abnormal lactate (43%) and 20 out of 35 patients with abnormal methemoglobin levels had normal lactate (57%), statistically significant with p-value: 0.01. Sickle cell disease was found to have a statistically significant association for high methemoglobin level (RR: 1.6: 95% CI: 1.01- 2.52) compared to other chronic diseases.

Conclusions: Abnormal methemoglobin levels were seen most commonly in the pediatric age group. Sickle cell disease was found to have statistically significant association with high methemoglobin level (RR: 1.6: 95% CI: 1.01-2.52) compared to other chronic diseases.

3 The Utility of Salicylate Assay for All Cases of Paracetamol Overdose

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Objective: The objectives of this study were to determine whether testing the salicylate level of paracetamol overdose cases is necessary, and to assess the risk factors that may contribute to salicylate (ASA) toxicity in paracetamol overdose patients.

Methods: We performed a retrospective study of all patients with paracetamol overdose presented to Royal Hospital emergency department from January 2007 to January 2017. Data were taken from the Al Shifa health care system. Data was collected and analyzed using Epidata and SPSS 22.0 software.

Results: A total of 338 patients (female = 288, male = 50) had paracetamol overdose. Of these, 145 patients admitted to having other types of ingestion (pseudoephedrine and triprolidine, mefenamic acid, antibiotic, antihistamine, aspirin, cough syrup, benzodiazepine, hyoscine, loperamide, alcohol, nonsteroidal anti-inflammatory drugs, household cleaning fluids, and psychiatric medication), 190 denied any ingestion, and three patients had no documentation of ingestion. Salicylate level testing was done for 189 patients, six patients were positive. Among the six cases, two had a history of ASA ingestion, two had a history of other medication ingestion, one had a history of abdominal pain, and one denied any ingestion or any clinical feature suggestive of ASA overdose. All ASA levels were nontoxic.

Conclusions: In view of these results, the absence of ASA ingestion history or clinical features ASA toxicity level proves that testing of ASA level is unnecessary among paracetamol overdose cases. There was one patient missing out of 189 (0.5 %), which was in the toxicologist's and statistician's opinion were insignificant.

4 An Examination of the Protective Effect of Ethyl Pyruvate and N-Acetyl Cysteine in An Experimental Corrosive Esophageal Burn Model in Rats

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Objective: Esophageal burns associated with ingestion of corrosive substances are frequently seen in both children and adults. However, no standard method of treatment to prevent mortality and morbidity has yet been developed. This study was performed to examine the effect of N-acetyl cysteine and ethyl pyruvate, both with known antioxidant effects, on damage developing in association with sodium hydroxide induced corrosive burns in the esophagus.

Methods: Thirty-five rats were randomly assigned into five equal groups. Rats scheduled for burn received 25% NaOH by gavage. Group 1 constituted the sham group, and Group 2 the control group, Group 3 received N-acetyl cysteine, Group 4 received ethyl pyruvate, and Group 5 received N-acetyl cysteine and ethyl pyruvate in combination. At the end of the fourth day, the esophagi of all rats were extracted for histopathological examination.

Results: Total histopathological damage scores were evaluated at the end of the study. Groups 3 and 5 differed statistically significantly from the control group in terms of total histopathological scores (p=0.001), while no significant difference was determined in Group 4. Stenosis index results in Groups 3 and 5 were similar to the total histopathological scores (p=0.004)

Conclusions: N-acetyl cysteine alone or in combination with ethyl pyruvate, may be useful in preventing esophageal damage associated with corrosive burns and in achieving histopathological improvement in an experimental setting.

5 Evaluation of Patients With Iron Toxicity in An Emergency Department

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Objective: In this study we aimed to analyze the demographic properties, clinical variables, treatment, and complications of patients presenting to emergency department (ED) with iron toxicity.

Methods: This is a retrospective study. It enrolled patients presenting to the ED of a tertiary training hospital for treatment of iron toxicity. Patients with missing medical data, pregnancy, and toxicity secondary to non-iron medications were excluded.

Results: Sixty-one patients were enrolled in the study. Women comprised 73.8%, and the median age was 32 (24-37) years. The mean amount of elementary iron intake was 1000 (710-1950) mg, with an average four-hour iron level 246 mg/dl (median, IQR 25- 76:119-327). There was a significant correlation between the amount of iron intake and blood iron level ($p=0.02$). Laboratory testing showed a decrease in hemoglobin, platelet, and creatinine levels and an increase in INR level (for all parameters, $p<0.05$). No significant difference was found between the toxic and non-toxic groups with respect to any of the monitored blood parameters ($p>0.05$).

Conclusions: Iron toxicity may be encountered in ED clinical practice. Although our results showed that about half of our patients took a toxic iron dose; the severity of toxicity was mild in most. We found decreased hemoglobin, platelet, and creatinine levels by laboratory measurement, but we do not believe that this finding is clinically meaningful. We detected an increase in INR level, which we believe may indicate tissue affection at cellular level without a clinical affection.

6 The Effect of Resveratrol on Ischemic Tissue Injury in Experimental Carbon Monoxide Poisoning

Sinan Pasli[1*], Mustafa Cicek[2], Ozgur Tatli[3], Yunus Karaca[3], Ahmet Mentese[4], Suleyman Caner Karahan[4], Esin Yulug[5], Suleyman Turedi[3], Aynur Sahin[3]

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Objective: The aim was to investigate the protective effect of resveratrol on the ischemia, inflammation and oxidative injury in brain and heart tissue in experimentally induced CO intoxication.

Methods: Forty-two mature female Spraque Dawley rats were randomized into six groups of 7 rats in each group. Groups I-II-III were inhaled in room air for 60 minutes. Groups IV-V-VI were inhaled at a high concentration of 5000 ppm CO gas mixture for 4l/min until loss of consciousness and CO levels were measured. Group I,IV received 1ml of normal saline.

Dimethylsulfoxide (DMSO) was administered to group II,V at a dose of 16mg/mL. 25mg/kg resveratrol i.p. was administered to groups III,VI. At the end of 48 hours, rats were sacrificed by decapitation and tissue samples were taken. In brain tissue; neuron damage score, percentage of degenerate neuron, apoptosis rate of cortex and hypothalamus were calculated. In heart tissue myocyte degeneration, vascular congestion and myocyte apoptosis rate were calculated. Total antioxidant level (TAS), total oxidant level (TOS) and oxidative stress index (OSI) levels of tissue samples were also calculated.

Results: Histopathological evaluation revealed that resveratrol significantly reduced tissue damage in the brain when comparing groups IV and VI ($p<0.001$). Resveratrol also reduced cardiac myocyte degeneration and myocyte apoptosis rate in heart tissue ($p=0.003$, $p<0.001$ respectively). No positive effect of resveratrol was found in the evaluation performed on antioxidant parameters.

Conclusions: It was found that resveratrol administration in experimental setting may be beneficial in preventing injury secondary to CO in brain tissue.

7 Investigation of The Therapeutic Effect of Silibinin in Experimental Corrosive Esophageal Burn Model

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Aim: This study was conducted to investigate the effect of silibinin on corrosive esophageal burn caused by sodium hydroxide (NaOH) in an experimental burn model.

Methods: Twenty-eight Spraque Dawley female rats, each weighing 225-250 gm (seven groups in each experimental group) were used. The rats were given 12.5% NaOH gavage to form the burn pattern. Group-I (SF group, n=7); burn was not formed, SF was given. Group-II (silibinin group, n=7); no burn formed, silibinin was given. Group-III (burn+SF group, n=7); Burn was formed, SF was given. Group-IV(burn+silibinin group, n=7); burn was formed, silibinin was given. At the end of the third day, blood and esophageal tissue samples of all rats were taken for evaluation. Assessment of histopathologic structure was based on collagen accumulation, granulation, inflammation and stenosis index (SI). Total antioxidant level(TAS), total oxidant level(TOS) and oxidative stress index (OSI) levels were determined in blood and tissue specimens in biochemical examination.

Results: Significant difference in parameters such as inflammation, hemorrhage, total histopathologic damage score, which reflects the acute inflammatory period histopathologically in the cases of corrosive esophageal burns were determined. Also there was a significant difference in both hemorrhage score and stenosis index measurements in the group treated with silibinin compared to both groups with corrosive burns ($p<0.008$).It has therefore been found that silibinin has a positive effect on burn healing partially.

Conclusions: In the experimental corrosive esophageal burn model, silibinin facilitated partial healing and further experimental studies are needed in further protocols.

8 A Snapshot on Narcotics and Psychoactive Substances in Kuwait: Qualitative Analysis of Illicit Drugs Seized, Consumed and Associated with Deaths in Kuwait from 2015 to 2018

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Objective: The use of illicit drugs is a global public concern. These substances are highly addictive; thereby their excessive medical use have been prohibited and criminalized under international drug control treaties. Despite the international efforts to eliminate drug abuse, the global consumption trend of these substances increases continuously. Although the misuse of these substances is documented worldwide, there is a lack of data about such an issue in the Gulf region, and Kuwait, specifically. Thus, the current study investigates the different types and amounts of seized narcotic drugs and psychotropic substances, number of abusers and the mortality among abuser, in Kuwait from 2015 to 2018. In total, 6220 cases from the Narcotic and Psychotropic laboratory and 17,755 cases from the Toxicology Laboratory were reviewed and analyzed.

Methods: Different substances were identified and documented using the GC-MS and LC-MS-MS.

Results: In term of the seized amount, cannabis, including marijuana, was the most sized substance, followed by heroin, opium and cocaine. Amphetamines, including methamphetamine, have been received in large quantities when compared to other psychoactive substances, whether in the form of powder or pills. Benzodiazepines, tramadol, Khat, synthetic cannabinoids and psilocin were also seized.

Conclusions: Our toxicological analysis showed that the most consumed substances were in the following order; amphetamines (including methamphetamine), benzodiazepines, cannabis and morphine. Additionally, in term of abuser gender, the misuse among males was much higher than that of females, for all different illicit drugs. Finally, we have reported the rate of death associated with drug abuse of the various illegal drugs.

9 Frequency of Poison Center Cases Involving Surgical Issues: One Year Retrospective Review

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Background: The North American poison center model has medical toxicologists managing poisoned patients. Although consultations and liaison with other specialties occur, surgical involvement in management is infrequent. Numerous poison center calls require or might benefit from surgical involvement. Examples include foreign body ingestion, such as with button batteries, neodymium magnets, or drug packages ingested by body packers; caustic exposures requiring GI surgery, corneal graft/replacement, or skin graft; compartment syndromes from poisoning; and animal bites requiring tissue debridement. Here we describe frequency of poison center cases for which surgical (or subspecialist) involvement may be beneficial.

Methods: A specialist in poison information and medical toxicologist reviewed all Qatar Poison Center cases in its first year of operations. Relevant cases included: foreign body ingestions; caustic exposures including ingestions, ocular exposures, and dermal burns; animal bites and stings; and all cases involving potential or actual compartment syndrome.

Results: There were 198 cases meeting criteria noted above. They were in the following categories: caustic exposures (108); foreign body ingestion (48); button battery (8), neodynium (high power) magnet (4), water beads (3), body packer (1), regular battery (3), unknown/other (24); animal bite/sting (29), cat (10), snake (5), dog (3), monkey (2), human (2), camel (1), hamster (1), lizard (1), rabbit (1), spider (1), stonefish (1), turtle (1); and burn (1).

Conclusions: We found that 198 cases involved issues with surgical relevance. Regular consultation with surgeons in relevant cases might improve management, be informational to surgical teams, and help establish lines of communication valuable in rare cases when immediate surgical intervention is needed.

10 Pharmacist-led Management of Home Poisonings in Qatar: A Quality Assessment Study

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Objective: Poisonings can lead to significant morbidity and mortality, but most poison exposures do not require management in a healthcare facility (HCF). The Qatar Poison Center (QPC) provides poisoning management advice to the public and to healthcare professionals through a hotline. This study seeks to describe poison exposures successfully managed at home with guidance from the QPC.

Methods: A retrospective analysis was conducted by gathering call-specific data from the QPC database from December 2018 to March 2019. Calls for human exposures were included if they were made to the QPC from non-HCF. Data collected included assessment of toxicity and medical outcome. Descriptive summary data analysis performed.

Results: Non-HCF calls represented 33% of all calls received. The QPC recommended home management for 73% of these cases, and only 27% were referred to a HCF. Most of the cases managed at home (89%) were assessed as nontoxic or subtoxic exposures by the QPC, and 11% as potentially toxic. All cases managed at home (100%) had no or minimal clinical effects on follow-up.

Conclusions: This quality assessment study suggests that QPC pharmacists are able to safely prevent unnecessary healthcare visits by managing patients at home. Patients with expected subtoxic and nontoxic poison exposures, and selected patients with potentially toxic poison exposures were managed at home with no adverse outcomes and no patients subsequently requiring hospital visits or other care in a HCF. Therefore this service may lessen the burden on emergency departments in Qatar by preventing healthcare visits after poison exposures.

11 Toxicity Related to Fipronil Exposures in Qatar: A Retrospective Review

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Background: Fipronil is a broad spectrum phenylpyrazole that belongs to a new generation of insecticides and possesses a higher affinity to GABA receptors in insects compared to humans. It is a relatively new insecticide and further investigations should be carried out to evaluate its safety in humans.

Objective: This study seeks to describe the acute clinical effects associated with fipronil exposures in Qatar.

Methods: A retrospective analysis was conducted by gathering call-specific data from the Qatar Poison Center (QPC) database from October 2018 to Nov 2019. All calls made to QPC were included in the study if they were related to fipronil exposure. Data collected included patient age, routes of exposure, criticality of case, clinical effects post exposure and management recommended. Descriptive summary data analysis performed.

Results: A total of 19 cases were identified from October 2018 to November 2019. The median age for cases received was two years, and all were <12 years old (100%). Around (57.9%) of the cases had no effect post exposure, while (42.1 %) had a range of effects including gastrointestinal (31.5 %), neurological symptoms (10.5 %) such as drowsiness and lethargy, and dermal symptoms (5.2 %). At the end of observation period, most cases (94.7 %) had no or minor effect and few (5.2 %) were not followed as patient/caregiver left against medical advice.

Conclusions: Findings of this study suggest that these pediatric fipronil exposures are associated with mild clinical effects including gastrointestinal and neurological symptoms. Poison prevention approaches should be widely spread to protect users.

12 Chemical Exposure Surveillance System, Lebanon, 2019

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Objective: Chemical incident surveillance was officially launched, in Lebanon, in February 2018 by the Epidemiological Surveillance program at the Ministry of Public Health (MOPH). The primary objective of the chemical incident surveillance is to build national surveillance capability to detect and respond to chemical exposures of potential public health significance. The secondary objectives are to identify chemical incidents and describe products and exposures, as well as outcomes.

Methods: A national protocol for chemical incident surveillance was developed in July 2017. Hospitals were invited to participate in the surveillance program on a voluntary basis. Cases presenting at the Emergency Department were included. A monthly bulletin is edited and shared on the MOPH website.

Results: Thirty hospitals from eight governorates are actively participating in the surveillance system. During 2019, 338 cases were reported with a median age was 20 years [16-37] and 61% being females. The most frequent type of chemical exposure involved pharmaceutical products (35%), chemical household products (32%), pesticides (9%) and carbon monoxide (6%). Two deaths were reported following carbon monoxide exposure and pesticides ingestion. As per intention, 43% of incidents were intentional, while 39% were unintentional.

Conclusions: National surveillance of chemical incidents in Lebanon is established. More hospitals are needed to participate. The collected information enhances our knowledge on the national chemical profile. Moreover, such information will guide needed health education and awareness for prevention. The collaboration of governmental and non-governmental partners will improve the sensitivity of this system and its ability to prevent such incidents.

13 Analysing the Rates of Poisoning in Turkey

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Objective: The data on poisoning cases in Turkey are limited. In the present study, the percentage change over the years in admission to the poison control center, and the death rates in Turkey due external injuries and poisoning were analyzed.

Methods: This study was planned as a descriptive study. According to the Turkish Statistical Institute

data the percentage change of deaths from external injury and poisoning in the last decade in the 12 regions of Turkey was calculated.

Results: In Istanbul, the percentile changes in deaths related to external injury and poisoning decreased 8.70% over this time. The changes were: Eastern Marmara 52.41% increase; Western Marmara 102.04% increase; Aegean Region 97.88% increase; Western Anatolia Region 23.70% increase; Central Anatolian Region, 64.91% increase; Central Eastern Anatolia Region 50.00% increase; Northeast Anatolian Region, 126.47% increase; Southeast Anatolia Region, 10.99% increase; Eastern Black Sea Region, 40.52% increase; Western Black Sea Region 35.24% increase; and Mediterranean Region 160.57% increase. Between 2009 and 2017, a 90.74% increase was reported in deaths due to external injuries and poisonings in Turkey. There has been an increase of 1.63% in deaths from external injuries and poisoning in the last decade.

Conclusions: Poisoning is an important health and socioeconomic problem in humans. The reasons for the remarkable increase in poisonings during the last decade should be investigated and preventive measures taken by the Ministry of Health.

14 A Ten-Year Clinico-Epidemiology Profile of Poisoned Patients in a Tertiary Care Emergency Department in the Black Sea Region of Turkey

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Objectives: The aim of this retrospective epidemiological study was to investigate the demographical, etiological, clinical characteristics and 10-year trends of acute drug poisonings in city of Trabzon, Turkey.

Methods: All patients were referred and admitted in the Emergency department of Karadeniz Technical University Farabi Hospital. Between 2007 and 2016.

Results: A total of 1811 cases of acute drug poisonings were recorded and eligible for study protocol, counting for 0.35% from the total number of 505,525 emergency visits. The majority of these poisonings resulted in 17-25 age group (50%) and 63.1% were women. A high percentage 60.72% of patients was attempted suicide, 44.6% patients consuming drugs for purposes of suicide has a known psychiatric disease. The most frequently involved drugs were analgesics (24.4%) followed by antidepressants (24.3%). Paracetamol exposure was the most common form of intoxication among analgesic drugs and also among all preparations (12.3%). The most common antidepressant was amitriptyline (6%). The number of patients admitted with referral within 10 years gradually decreased. In addition, though amitriptyline intoxications was the most common poisoning initially, these decreased and paracetamol poisonings increased to become the most common. Mortality occurred in 0.16% of the total number of acute drug poisonings.

Conclusions: These findings should be taken into account when taking precautions aimed at reducing intoxication-related mortality and morbidity. The characteristics of each country's own intoxication population should be clarified by means of multi-center studies.

15 Hospital Mortality due to Acute Poisoning in Azerbaijan

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Objective: The aim of this work was analyzing the structure of fatal poisoning in Azerbaijan and find the possible ways to prevent them.

Methods: The structure of acute poisoning mortality was studied using archival data of the Poison Center Ministry of Health of Azerbaijan for the period 2009-2018. A total of 505 cases of lethal poisoning in the toxicological hospital were analyzed.

Results: At the first place both in the general structure of hospital mortality (46.5%; n = 235) and in the mortality rate of nosology (8.52%) were cases of toxic effect of corrosive substances, and in particular, concentrated acetic acid poisoning used for suicidal purposes. This poisoning was 43.4% (n = 219) of all fatal intoxications, and the hospital mortality rate for this nosology reached a record 10.64%. Pharmaceutical poisoning was the second most common fatal intoxication (14.7%; n = 74) but the lethality of this nosology was relatively small at

0.91%. We also noted significant level of pesticides poisoning hospital mortality of 3.49%.

Conclusions: Hospital mortality due to acute poisoning in Azerbaijan was most commonly due to corrosive substances, and 93.2% of these patients had acute poisoning by concentrated acetic acid (vinegar essence). To reduce the hospital poisoning mortality rate in Azerbaijan the free sale of concentrated acetic acid should be limited.

16 Performance Enhancing Supplements Use among Gym-Athletes in Muscat and Reported Side-Effects

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Background: Performance-enhancing drugs (PEDs) are used to boost activity or gain advantage in sport competitions. They consist of a wide range of medications, including: anabolic steroids, stimulants, and others. Their side effects can include multi-organ-systems, and can lead to death in some cases.

Objectives: To describe the pattern of supplements use by gym-members in Muscat, and level of awareness regarding their side-effects.

Methods: A cross-sectional questionnaire-based study self-administered to random athletes from gyms in Muscat between November 2019 and January 2020.

Results: A total of 120 gym-member were included, 64% of which were between the ages of 18 and 30 years. 93% were males and 7% females, 85% from the Omani population. 16% were students, while 67% worked in various occupations. 62% were undergraduates. 49% were weight-lifting, while 22% reported doing mixed exercises. However, 81% had no proper trainer. Supplement use was reported in 75%. In 33% it was synthetic and 31% didn't even know what type of supplements they were using. 47% have been using supplements between six months and two years. 43% reported being advised to use supplements by a colleague or a trainer. Interestingly 44% didn't know of any potential side-effects of using supplements. Only 7% reported using supplements under medical supervision with 72% having no routine medical check-ups. 8% reported having chronic illnesses. 15% reported previous hospital admissions.

Conclusions: Supplements-use is a common trend in gym-athletes, especially in undergraduates with no medical supervision. Lack of awareness of potential side effects is very common and further health education is needed.

17 Global Characteristics of Chemical, Biological and Radiological Poison Use in Terrorist Attacks

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Background: Chemical, biological, and radiological (CBR) terrorism continues to be a global threat. Studies examining global and historical toxicological characteristics of CBR terrorism are lacking.

Methods: The Global Terrorism Database and RAND Database of Worldwide Terrorism Incidents were searched for CBR terrorist attacks between 1970 and 2017. Events fulfilling terrorism and poisoning definitions were included. Variables of event date and location, event outcome, poisonous agent type, poisoning agent, exposure route, targets, connected events, additional means of harm, disguise methods, poisonings, and casualties were analyzed along with time trends and data gaps.

Results: A total of 446 events of CBR terrorism were included from all world regions. A trend for increased number of events over time was observed (R2=0.727, coefficient=0.511). In these attacks, 4,093 people lost their lives and 31,903 were injured. Chemicals were the most commonly used type of poison (63.5%). The most commonly used poisonous agents were acids (12.3%), chlorine or chlorine compounds (11.2%), riot control agents (10.8%), cyanides (5.8%), and *Bacillus anthracis* (4.9%). Occurrence of poisoning was confirmed in 208 events (46.6%). Most common exposure routes skin, mucosa or eye (57.2%) and inhalation (47.5%). Poison was delivered with an additional means of harm in 151 events (33.9%) and in a disguised way in 214 events (48.0%), respectively.

Conclusions: CBR terrorism is an ongoing and increasingly recorded global threat involving diverse groups of poisons with additional harmful mechanisms and disguise. Industrial chemicals

were employed in chemical attacks. Vigilance and preparedness are needed for future CBR threats.

CATEGORY 2: BASIC RESEARCH

18 Exposure to Melamine from the Period of Milk Cutting Can Damage the Kidney Tissue

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Objective: The aim of this study was to investigate the effects of melamine, which is used to provide false positivity in protein content in baby and pet foods on kidney tissue by histopathological methods.

Methods: Eighteen Wistar albino female rats divided into three groups (Local Ethics Committee Approval number: 2019/11).Group 1 had 0.1ml saline by oral gavage. In Group 2, 50mg/kg melamine was dissolved with 0.1ml saline and in Group 3, 75 mg / kg melamine was dissolved with 0.1ml saline and given by oral gavage for 21 days starting from postnatal 21st day (milk cutting period). At the end of the 45th day, animals were sacrificed and kidney tissues were taken. Electron microscopic (EM), histopathological and morphometric analysis were performed in kidney tissues.

Results: In the EM analysis, endothelial fenestrae were disrupted, the capillary lumen was closed due to endothelial enlargement, pedicels were enlarged and podocytes were hypertrophic in the 75mg melamine group. Pedicels in the 50mg group were enlarged more than the control group. Endothelial fenestrae were also partially defective, but the capillary lumen was more open than 75mg melamine group. According to histological examination, it was observed that glomerular damage, tubule-interstitial inflammatory cell infiltration, dilatation and damage in epithelium of proximal and distal tubules were higher in both melamine groups compare to control. In the morphometric analysis, there was no statistical difference in glomerular area between all groups. There was a statistical significant increase in bowman space in 75mg melamine group compare to others.

Conclusions: 50mg and 75mg melamine exposure from the milk cutting period causes kidney damage.

CATEGORY 3: CASE REPORT

19 Accidental Pediatric Levothyroxine Ingestion Presented to Tertiary-care Emergency Department

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Background: A single dose of levothyroxine has a half-life of seven days, showing maximum effect in 10 days and is eliminated within two to three weeks. Accidental levothyroxine ingestion is rare but more common in children, usually in doses less than 4 mg. Symptoms noted to manifest 24 hours post ingestion, ranging from tachycardia, hypertension, hyperthermia, to arrhythmia and seizures.

Objectives: To describe the clinical course and outcomes in pediatric accidental ingestion of levothyroxine presented to Sultan Qaboos University Hospital (SQUH) Emergency Department (ED).

Methods: This is a retrospective chart-review study including patients 12 years or younger presenting to SQUH-ED from March 2016 to December 2019. Data was collected from the medical records of the hospital's information system.

Results: Four patients were included. The ingested dose was reported in (2/4) of the cases, the maximum being 1.3mg. (3/4) presented to ED within two hours. Activated charcoal was administered to (2/4) patients. (3/4) had normal vitals throughout their presentation to ED. One patient presented seven hours post ingestion with sinus tachycardia, had a thyroid function test (TFT) with elevated Free T4 (52.3 pmol/L) and low TSH (0.55 mIU/L), was admitted for 24hr- observation and discharged in good condition. Initial TFT was done 72 hours post ingestion in (2/4) patients. A medical toxicologist was consulted in all four cases in the ED. (3/4) were followed-up and were doing well.

Conclusions: Accidental pediatric ingestion of levothyroxine is usually asymptomatic and can be discharged home. Initial TFT is not always needed and patients tend to have a good outcome.

20 A Rare Cause of Bluish Vomitus: Copper Sulfate Ingestion

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Background: There are life-threatening causes of bluish vomiting such as boric acid, copper sulfate, and paraquat intake. Copper sulfate is found in industrial and household products as a manufacturer of fertilizers, fungicides, and insecticides. We report a case of an accidental copper sulfate ingestion with mild symptoms.

Case Report: A 49-year-old male patient presented to the emergency department (ED) with nausea and vomiting after accidentally drinking a mouthful of a wood protector which contains copper sulfate. There were no abnormal findings on vital signs and physical examination except bluish vomitus. Vascular access and fluid resuscitation were performed with antiemetics. Laboratory values and vital signs were totally normal and unchanged significantly during the observation. After 36 hours of observation, the patient was asymptomatic and discharged with normal laboratory and physical examination findings.

Conclusions: Copper sulfate is widely used in the chemical industry and agriculture for its fungicidal and bactericidal properties. It is a rare poisoning usually caused by accidental ingestion. Symptoms of poisoning include nonspecific issues such as nausea, vomiting, diarrhea and abdominal cramps. The diagnosis of copper sulfate poisoning is based on history and the clinical features. Severe copper sulfate poisoning can lead to caustic GI injuries, intravascular hemolysis, methemoglobinemia, rhabdomyolysis, and multiple organ failure. Ingestion of more than 1 g of copper sulfate leads to signs of toxicity. There is little clinical experience in the use of chelators in the setting of acute copper intoxication. ED physicians should be aware of this life-threatening poisoning.

21 A Toxicology Case Series: Spinach Poisoning

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Introduction: Anticholinergic intoxications may be fatal if not recognized in time. In this case we review 16 cases (three children) who presented to the hospital with symptoms of dizziness, nausea, hallucination, headache and palpitations after eating spinach.

Case Report: There were a total of 16 cases, three of whom were children, who presented to our hospital between November 1, 2019 and November 6, 2019. All cases involved dizziness, hallucination, headache, fever, and meaningless speech starting after eating spinach. The mean age was 39.6 years (range 3 - 77 years).Children were admitted to the pediatric emergency department of our hospital.

On November 1, 2019, five patients who belonged to the same family presented to the emergency department. Pediatric patients were treated in the pediatric emergency department. The other three patients presented with complaints of severe dizziness, headache, nausea, and hallucinations after eating spinach. The symptoms were evaluated as anticholinergic syndrome and gastric lavage was performed, followed by administration of activated charcoal, and conservative treatment was continued. Five patients left the hospital without permission during follow-up. Nine of them were discharged after 24 hours of follow-up in the emergency department. A 73-year-old female patient was admitted to the adult Emergency Department Service. She was discharged from the service after the 48th hour; laboratory parameters were normal.

Conclusions: In conclusion, we think that atropine-containing plants or psychoactive drugs that caused this anticholinergic syndrome. In cases of excitability with confusion and somnolence or coma of unknown origin, anticholingergic poisoning should be considered in the differential diagnosis.

22 Role of ECMO in Cyanide Poisoning

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Introduction: Cyanide affects organs due to irreversible mitochondrial deterioration. Recently ECMO has been used in cases of poisoning. We presented a case with ECMO applied after cyanide poisoning, followed by brain death.

Case Presentation: A 28-year-old patient was brought in after taking cyanide orally 30 minutes prior. He was hypotensive, tachycardic and comatose with lactic acidosis. He was endotracheally intubated, and gastric lavage performed followed by administration of activated charcoal. In echocardiography, VCI was respiratory collapse and 1.4 cm diameter, global hypokinesia was observed. Crystalloid, dopamine, norepinephrine, sodium bicarbonate were given. The National Poison Counseling Center was contacted and advised that hydroxocobalamin was available. Venoarterial ECMO was planned to maintain perfusion. The patient experienced ventricular fibrillation, which was treated by defibrillation, afterwhich atrial fibrillation occurred. Four hours after presentation, hydroxocobalamin was given, just before ECMO application. His blood pressure increased after antidote administration, and inotropic treatment was stopped.

Although blood pressure improved, it was predicted that perfusion may be impaired again due to high lactate level and malignant arrhythmia. With this indication, venoarterial ECMO was applied 4.5 hours into treatment. On second hospital day, he was diagnosed with brain death. Organ transplantation was canceled because the organ transplant committee was concerned about complications related to cyanide. He died on third day.

Conclusions: Cyanide, a cytotoxic substance, is known to disrupt intracellular metabolism and cause cerebral damage independent of perfusion. Therefore, as observed in our case, we can say that ECMO does not prevent brain death in cyanide poisoning.

23 Carbon Monoxide Poisoning from Nargile Smoking in Two Young Men

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Introduction: Nargile smoking is a conventional method of tobacco use. In Turkey, it is gaining popularity as a social activity. In this report, we describe two patients presenting to our department with syncope resulting from CO poisoning after nargile smoking.

Case Presentation: A 22-year-old and a 19-year-old man were brought by ambulance because of nausea, dizziness, and syncope. Their vital signs were within normal limits. The first patient's blood pressure, 130/75 mmHg; pulse rate, 82 beats/min; temperature, 36.8°C; SpO_2, 96%. The second patient's vital signs were normal too. Their biochemical markers and electrocardiograms were normal. Their history revealed that they had smoked a nargile in a house for four hours. The patients' COHb levels were 20.5% and 34.2%. A non- rebreather high-dose oxygen mask was fitted pending transfer to a center for hyperbaric oxygen therapy. The patients received hyperbaric oxygen therapy. After treatment, the patients' COHb levels decreased to 1.2% and 1.4%. The patients were asymptomatic and were discharged with complete recovery.

Conclusions: Carbon monoxide (CO) is a colorless, odorless, and non-irritating gas. In Turkey, the main sources of CO poisoning are charcoal stoves and water heaters. The standard treatment for CO poisoning is administration of high-flow oxygen, and either hyperbaric oxygen therapy or normobaric oxygen therapy. In our case, CO poisoning was suspected from the patients' nonspecific symptoms and their nargile smoking anamnesis. Diagnosis was confirmed by their increased COHb level.