Current Awareness in Clinical Toxicology

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CONTENTS

CURRENT AWARENESS PAPERS OF THE MONTH

Case series: toxicity from 25B-NBOMe – A cluster of N-bomb cases

Gee P, Schep LJ, Jensen BP, Moore G, Barrington S. Clin Toxicol 2015; online early: doi: 10.3109/15563650.2015.1115056:

Background

A new class of hallucinogens called NBOMes has emerged. This class includes analogues 25I-NBOMe, 25C-NBOMe and 25B-NBOMe. Case reports and judicial seizures indicate that 25I-NBOMe and 25C-NBOMe are more prevalently abused. There have been a few confirmed reports of 25B-NBOMe use or toxicity.

Report

Observational case series. This report describes a series of 10 patients who suffered adverse effects from 25B-NBOMe. Hallucinations and violent agitation predominate along with serotonergic/stimulant signs such as mydriasis, tachycardia, hypertension and hyperthermia. The majority (7/10) required sedation with benzodiazepines.

Analytical method

25B-NBOMe concentrations in plasma and urine were quantified in all patients using a validated liquid chromatography?tandem mass spectrometry (LC-MS/MS) method. Peak plasma levels were measured between 0.7–10.1 ng/ml.

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Discussion

The NBOMes are desired by users because of their hallucinogenic and stimulant effects. They are often sold as LSD or synthetic LSD. Reported cases of 25B- NBOMe toxicity are reviewed and compared to our series. Seizures and one pharmacological death have been described but neither were observed in our series. Based on our experience with cases of mild to moderate toxicity, we suggest that management should be supportive and focused on preventing further (self) harm. High doses of benzodiazepines may be required to control agitation. Patients who develop significant hyperthermia need to be actively managed.

Conclusions

Effects from 25B-NBOMe in our series were similar to previous individual case reports. The clinical features were also similar to effects from other analogues in the class (25I-NBOMe, 25C-NBOMe). Violent agitation frequently present along with signs of serotonergic stimulation. Hyperthermia, rhabdomyolysis and kidney injury were also observed.

Full text available from: http://dx.doi.org/10.3109/15563650.2015.1115056

Review of the effect of intravenous lipid emulsion on laboratory analyses

Grunbaum AM, Gilfix BM, Hoffman RS, Lavergne V, Morris M, Miller-Nesbitt A, Gosselin S. Clin Toxicol 2015; online early:

doi: 10.3109/15563650.2015.1115515:

Context

Although the clinical use of intravenous lipid emulsion therapy for the treatment of lipophilic drug toxicity is increasing, the focus of most publications is on outcome in laboratory animals or in patients. An unintended consequence of intravenous lipid emulsion is the creation of extremely lipemic blood, which may interfere with the laboratory analysis or interpretation of common analytes.

Objective

The American Academy of Clinical Toxicology has established a lipid emulsion workgroup to review the evidence and produce recommendations on the use of this novel therapy for drug toxicity. The aim of this subgroup is to review the available evidence regarding the effect of intravenous lipid emulsion on common laboratory testing, which often forms the basis of the appraisal of the balance between benefits and potential adverse events.

Methods

We performed a comprehensive review of the literature. Relevant articles were determined based upon a predefined methodology. Package inserts of manufacturers' assays were collected. Article inclusion required that the article met predefined inclusion criteria with the agreement of at least two members of the subgroup.

Results

We included thirty-six articles in the final analysis. Evaluation of the reviewed analytes revealed heterogeneity with regards to the assessment of the effect of intravenous lipid emulsion in terms of consistency and magnitude of effect across the different analytic platforms.

Conclusions

The measurements of a number of common analytes can be markedly affected by the lipemia produced by lipid emulsions such that they cannot always be interpreted in the way that most physicians use this information in typical clinical situations. In fact, a lack of appreciation of this effect may lead to unintentional treatment errors. Because the effect of the lipemia produced is dependent on the reagents and laboratory platform used, it would

be useful for all future reports to clearly document sample handling, reagents and laboratory platform used, as well as any procedures employed to reduce the lipid content.

Full text available from: http://dx.doi.org/10.3109/15563650.2015.1115515

In vitro studies indicate intravenous lipid emulsion acts as lipid sink in verapamil poisoning

Kryshtal DO, Dawling S, Seger D, Knollmann BC. J Med Toxicol 2015; online early: doi: 10.1007/s13181-015-0511-y:

Abstract and full text available from: http://dx.doi.org/10.1007/s13181-015-0511-y

Hyperglycemia is a risk factor for high-grade envenomations after European viper bites (*Vipera* spp.) in children

Claudet I, Grouteau E, Cordier L, Franchitto N, Bréhin C. Clin Toxicol 2015; online early: doi: 10.3109/15563650.2015.1113542:

Context

Hyperglycemia has been described in severe scorpion envenomation, we wanted to analyze if it was applicable to viper bites in children.

Aim

To describe clinical, biological, and therapeutic characteristics of 83 children bitten by European viper (*Vipera* spp.) and to confirm that hyperglycemia is a risk factor for high-grade envenomation.

Material and methods

A retrospective study was conducted between 2001 and 2014 in the pediatric emergency department of a tertiary level children's hospital. Collected data were: age and sex of children; day and time of admission; day, time and circumstances of the accident; snake identification; bite location; envenomation severity; presence of fang marks; prehospital care; laboratory abnormalities, use of specific immunotherapy, associated treatments; length of stay; hospital course.

Results

Eighty-three children were included (62 boys, 21 girls). The mean age was 7.4 ± 3.9 years. Bites were most often located on the lower extremities (66%). The classification of envenomation was: 83% low grade (absent or minor envenomation) and 17% high grade (moderate to severe envenomation). All high-grade envenomations received specific immunotherapy (Viperfav™, (Aventis Pasteur, MSD, Lyon, France). Being bitten on an upper extremity (odds ratio [OR] 51.1 95% class interval [CI] [6.1–424], $p < 0.0001$), during the afternoon (OR 13.4 95% CI [1.7–107.9], $p = 0.015$), feeling violent pain (OR 4.2 95% CI [1.1–16.5], $p = 0.023$), and high initial plasma glucose level (6.5 ± 1.7 mmol/L versus 5.0 ± 0.9 mmol/L, $p = 0.027$) were associated with a significant risk of high-grade envenomation.

Conclusion

We have confirmed a potential link between initial hyperglycemia and the risk of progression to high-grade envenomation as well as its association with other published predictive factors.

Full text available from: http://dx.doi.org/10.3109/15563650.2015.1113542

Simplification of the standard three-bag intravenous acetylcysteine regimen for paracetamol poisoning results in a lower incidence of adverse drug reactions

Wong A, Graudins A. Clin Toxicol 2015; online early:

doi: 10.3109/15563650.2015.1115055:

Context

Adverse reactions to intravenous (IV) acetylcysteine treatment in paracetamol overdose, are reactions (NAARs) are influenced by the rate of acetylcysteine infusion.

Objective

We compared the incidence of adverse drug events of a two-bag IV acetylcysteine regimen with that of the traditional three-bag regimen.

Materials and methods

This was a retrospective analysis of patients presenting with paracetamol overdose requiring treatment with acetylcysteine to three emergency departments. We prospectively identified all presentations where IV acetylcysteine was administered using a 20 h, two-bag regimen (200 mg/kg over 4 h followed by 100 mg/kg over 16 h) from February 2014 to June 2015. We compared this to an historical cohort treated with the 21 h three-bag IV regimen (150 mg/kg over 1 h, 50 mg/kg over 4 h and 100 mg/kg over 16 h) from October 2009 to October 2013. Medical and nursing notes were searched retrospectively for entries suggesting the presence of an adverse reaction. The primary outcome was incidence of NAARs and gastrointestinal reactions in each group.

Results

389 presentations were treated with the three-bag regimen and 210 presentations received the two-bag regimen. NAARs were recorded more commonly with the three-bag acetylcysteine regimen than the two-bag regimen (10% vs 4.3%, p = 0.02, OR 2.5, 95% CI 1.1–5.8). There was no difference in reports of gastrointestinal reactions between cohorts (three-bag 39% vs two-bag 41%, p = 0.38, OR 1.17 95% CI (0.83–1.65)).

Discussion

The incidence of NAARs was significantly reduced by combining the first two bags of the traditional three-bag regimen and infusing these over 4 h at 50 mg/kg/hr. Simplifying the administration of acetylcysteine may have other benefits such as better utilisation of nursing time and reduced infusion administration errors.

Conclusions

A two-bag 20 h acetylcysteine regimen was well tolerated and resulted in significantly fewer and milder NAARs than the standard three-bag regimen.

Full text available from: http://dx.doi.org/10.3109/15563650.2015.1115055

Management of poisoning with ethylene glycol and methanol in the UK: a prospective study conducted by the National Poisons Information Service (NPIS)

Thanacoody RHK, Gilfillan C, Bradberry SM, Davies J, Jackson G, Vale AJ, Thompson JP, Eddleston M, Thomas SHL. Clin Toxicol 2015; online nearly: doi: 10.3109/15563650.2015.1116044:

Background

Poisoning with methanol and ethylene glycol can cause serious morbidity and mortality. Specific treatment involves the use of antidotes (fomepizole or ethanol) with or without extracorporeal elimination techniques.

Methods

A prospective audit of patients with methanol or ethylene glycol poisoning reported by telephone to the National Poisons Information Service (NPIS) in the UK was conducted during the 2010 calendar year and repeated during the 2012 calendar year. The study was conducted to determine the frequency of clinically significant systemic toxicity and requirement for antidote use and to compare outcomes and rates of adverse reaction and other problems in use between ethanol and fomepizole.

Results

The NPIS received 1315 enquiries involving methanol or ethylene glycol, relating to 1070 individual exposures over the 2-year period. Of the 548 enquiries originating from hospitals, 329 involved systemic exposures (enteral or parenteral as opposed to topical exposure), of which 216 (66%) received an antidote (204 for ethylene glycol and 12 for methanol), and 90 (27%) extracorporeal treatment (86 for ethylene glycol and 4 for methanol). Comparing ethanol with fomepizole, adverse reactions (16/131 vs. 2/125, $p < 0.001$) and administration errors, lack of monitoring, or inappropriate use (45/131 vs. 6/125, $p < 0.0001$) were reported more commonly, whereas non-availability and inadequate stocks were reported less commonly (6/125 vs. 33/131, $p < 0.0001$). Eight fatalities and complications or sequelae occurred in 21 patients. Poor outcome (death, complications, or sequelae) was significantly associated with older age, higher poisoning severity scores, and lower pH on admission ($p < 0.001$).

Conclusions

Systemic poisoning with ethylene glycol or methanol results in hospitalisation at least 2–3 times per week on average in the UK. No difference in outcome was detected between ethanol and fomepizole-treated patients, but ethanol was associated with more frequent adverse reactions.

Full text available from: http://dx.doi.org/10.3109/15563650.2015.1116044

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Extracorporeal treatment in phenytoin poisoning: systematic review and recommendations from the EXTRIP (Extracorporeal Treatments in Poisoning) Workgroup

Anseeuw K, Mowry JB, Burdmann EA, Ghannoum M, Hoffman RS, Gosselin S, Lavergne V, Nolin TD, on behalf of the EXTRIP workgroup. Am J Kidney Dis 2015; online early: doi: 10.1053/j.ajkd.2015.08.031:

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INDEX

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