Fatal Sodium Nitrite Poisoning: A Case Report

inequalities. In addition, the legal protection for those clinicians who act cost-effectively appears to be lacking under the Italian laws, on the basis that incomplete scientific evidence could be given to prove one's diligence in case of off-label use of drugs. The controversy is relevant, because the relatively wide scientific evidence gathered in favor of the off-label use of bevacizumab is uncomparable with that available in other clinical settings (e.g., Neonatal Intensive Care Units), where the off-label use of drugs is nonetheless common, even though the information about the optimal dosage, specific pharmacokinetics characteristics, as well as potential adverse reactions, is insufficient.

Off-Label Drugs, Medical Liability, Ethics

G146 Fatal Sodium Nitrite Poisoning: A Case Report

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After attending this presentation, attendees will learn about acute intoxication deaths resulting from unusual chemicals, representing a challenge for investigators and pathologists in charge of determining cause of death.

This presentation will impact the forensic science community by showing that only a collaborative and multidisciplinary approach involving public health officials, forensic pathologists, and toxicologists can properly lead a comprehensive investigation.

Sodium nitrite poisoning, usually due to accidental food and water contamination, is rarely recorded in the literature. Sodium nitrite is a white to slightly yellowish crystalline powder that is very soluble in water. Its main use is for the industrial production of organo-nitrogen compounds, but it is also used as a food additive because it inhibits growth of pathogenic microorganisms and is used as a taste and color preservative for certain meats. It can be toxic in high amounts for humans because it causes methemoglobinemia. Sodium nitrite's LDLo is 33-250mg/Kg, meaning a 60kg person would likely have to consume at least 2g to 15g to result in death.

Presented is a case of "iatrogenic" sodium nitrite poisoning that occurred during a medical examination and malabsorption test for three patients, resulting in the death of one of them. Three women performed a Sorbitol H2 Breath Test to detect specific sugar malabsorption. Acute-onset symptoms, consistent with chemical poisoning, occurred within minutes after consuming 5g of sorbitol dissolved in a glass of water. Symptoms included asthenia, lost of consciousness, myoclonic jerks, nausea, and retching. The emergency was immediately recognized, but unfortunately, one of the women died a few minutes later despite all efforts and administration of methylene blue in an attempt to revert methemoglobin to hemoglobin. The other two women were transported to the nearest emergency department where methylene blue was promptly administered. The two patients were later discharged without clinical sequelae after hospitalization in the Intensive Care Unit. Samples of the presumed sorbitol powder that had been administered to the women were collected by authorities in the private medical clinic where the breath test had been performed. Investigations revealed that sorbitol had been bought online (international website) and that it was the first time it had been used in this clinic. During the autopsy, the external examination of the cadaver revealed diffuse cyanosis and resuscitation signs. Postmortem findings (organ gross examination and histological analysis) confirmed a normal cardio-respiratory system apart from the evidence of multiorgan congestion and pulmonary intra-alveolar hemorrhagic edema. The gastrointestinal apparatus showed acute congestive and focal hemorrhagic findings of the visceral wall related to the contact with poison. The majority of organs also showed a bluish discoloration due to the intravenous infusion of methylene blue as a result of the attempt at resuscitation. Extensive toxicology testing was performed to determine the cause of the poisoning and a list of potential agents was developed by forensic toxicologists. Infrared spectroscopy and gas chromatography revealed that all the sorbitol recovered in the clinic was actually sodium nitrite at a concentration of 97 – 98%. Analyses of urine and blood collected at the time of autopsy were performed using gas chromatography and test for nitrites and nitrates; the presence of high concentrations of sodium nitrite was confirmed. The serum nitrite ion level was 0.97mcg/ml and this level is consistent with death from nitrite poisoning (lethal level >0.55mcg/ml). The small concentration of nitrite in urine suggested the occurrence of rapid death.

The health risk of purchasing drugs from online websites that are not official drug resellers of well-known companies will be debated.

Sodium Nitrite, Sorbitol Breath Test, Toxicity

G147 Postmortem Toxicological Review of Combined Drugs Toxicity Deaths Reported in the Republic of Ireland Involving the Detection of Bath Salts Headshop Products

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The goal of this presentation is to share the Irish experience in identifying deaths caused by combined drug toxicity in which detection of headshop products, referred to as bath salts, has been identified.

This presentation will impact the forensic science community by sharing, for the first time, the Irish experience of chemical deaths caused by combined drugs toxicity that postmortem toxicoloigcal analysis detected as headshop products (drugs), referred to as bath salts. The human toxicology section of the state laboratory is a centalized toxicological analysis unit that handles all referred samples from the various coronial services operating in the Republic of Ireland.

Synthetic cathinones include drugs like mephedrone, MDPV, butylone, flephedrone, and methylone that form part of a larger group of illegal drugs encountered in Ireland and other countries as components of products sold in retail stores referred to as head shops.

In Ireland, prior to May/June 2011, a rapid growth of these commercial interests was noticed on the main streets in the capital of Dublin and in most other smaller cities and towns in Ireland. The public as well as the media have become alarmed with the proliferation of the head shop products. A national TV documentary program focusing on a downtown Dublin street recorded 18 customers that queued, over an interval of 15 minutes of filming, in front of a small hatch of one head shop. They were buying these products for cash. Ireland was experiencing a new epidemic of addiction craze of consumption of head shop products, which have been marketed as bath salts although marked "not for human consumption," with 24 hr availability and facility for home delivery to those requesting such service. These products for some time have been legally cleared by customs when imported by these business outlets. An owner who was interviewed articulated his position that he was selling bath salts and it was up to the buyers to use them the way they saw fit. For example, one gram of his bath salts could sell from 10 to 30 euros!

The consumers of these products (the customers of these shops) spanned a wide range of ages (technically, customers must be over 18 to buy anything from a head shop) and represented all social strata, both sexes, and marital status.

Users' clinical signs and symptoms such as hallucinations, anxiety panic attacks, and psychosis were increasingly observed and reported to health workers; the police force was monitoring the rise of this worrying trend. These drugs have become a convenient replacement to the hard drugs of abuse as consumers began to inject these drugs. In November 2009, the first fatality of combined drug toxicity that included mephedrone was strongly suspected initially and was subsequently confirmed in postmortem toxicological analysis. In