

Objective: To alert toxicologists of poison control centres about the risk of acute renal injury following the application on the hair of straightening products containing glyoxylic acid.

Methods: Since 1 January 2024, ANSES (Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail) has been responsible for vigilance and expert appraisal relating to cosmetics products. Reporting their adverse effects to ANSES can reveal as yet unidentified risks, enabling regulations to be amended, if necessary, to prevent them. Cosmetovigilance relies on spontaneous reports from consumers, healthcare and beauty professionals, directly to ANSES or by the Ministry of Health's portal for reporting adverse health events, which is not specific to cosmetovigilance. Notification to ANSES of severe undesirable effect is mandatory for responsible persons and distributors of cosmetic products.

Results: From January to October 2024, 4 cases of acute renal failure following the use of an hair straightening products (4 different products) containing glyoxylic acid have been reported to ANSES. They concerned 4 women aged between 18 and 42 years who had experienced abdominal or lumbar pain, nausea or asthenia a few hours after the hair treatment. One of the patients had had three episodes several months apart [1]. One of the patients had had three episodes several months apart. All patients recovered without sequelae, most often (3/4) after hyperhydration in hospital. The physiopathological hypothesis is that glyoxylic acid contained in the hair-straightening product penetrates the body through the scalp, metabolises into oxalate and causes calcium oxalate nephropathy. ANSES also issued an internal request to perform a scientific review of the renal toxicity of glyoxylic acid with the aim to better regulate this substance in cosmetics.

Conclusion: After the publication of a series of 26 cases in Israel [2] and one case in Switzerland [3], these 4 French cases have led ANSES not to wait until the end of 2024 for the publication of its scientific expertise to alert consumers, health professionals and hairdressing professionals to this risk, in October 2024.

References

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- [3] Huber A, Deffert C, Moll S, et al. Acute kidney injury and hair-straightening products. *Kidney Int Rep.* 2024;9:2571–2573.

254. Markedly elevated methanol concentration in the setting of denatured alcohol ingestion that did not undergo dialysis

Jason Dietz, Noumi Chowdhury and
Rana Biary

NYU Grossman School of Medicine, New York, NY, USA

Objective: Although not reported in the case literature, some commercial forms of denatured alcohol contain a high percentage (~50%) of methanol but are admixed with enough ethanol to provide temporary blockade of the toxic alcohol metabolism. We report a case involving ingestion of denatured alcohol.

Case report: A 51-year-old gentleman struggling with alcohol use disorder was found sitting up in a chair but minimally responsive.

Collateral history later confirmed that the patient had been consuming a specific brand of denatured alcohol over the course of the day, which consisted of 30–50% ethanol, 40–60% methanol, and less than 1% of methyl isobutyl ketone, isopropyl acetone, or 4-methyl-2-pentanone. Presenting vital signs were: blood pressure 189/145 mmHg; pulse 94/minute; respiration 18/minute; temperature 36.6°C; room air oximetry 95%. Laboratory analysis revealed ethanol 51 mg/dL; sodium 146 mmol/L; blood urea nitrogen (BUN) 13 mg/dL; creatinine, 0.90 mg/dL; and beta-hydroxybutyrate, 0.13 mmol/L. Concentrations of toxic alcohols were not available in-house, forcing dependence on surrogate tests such as the osmolar gap. The first serum osmolality drawn 10 hours after arrival, was 510 mOsm/kg, with an osmolar gap of 213 mOsm/kg. Send out methanol testing, first drawn 21 hours after arrival, was 376 g/dL and isopropanol was undetectable. Nephrology was consulted from the onset but declined to perform dialysis. Methanol was still 48 g/dL a full five and half days after presentation. The patient was given a total of 12 doses of fomepizole and was discharged 8 days later without any adverse effects from the ingestion.

Conclusion: It is not uncommon that toxicology services are consulted with concern for a toxic alcohol exposure despite the presence of an elevated ethanol on arrival. It is far less common that an ongoing exposure consists of nearly equal parts ethanol and methanol. This patient was able to continue increasing his methanol concentration while remaining “blocked” with the self-titration of the ethanol in the same solution. It is fortuitous that he arrived at the hospital just as his ethanol declined below 100 mg/dL, but this also confounded interpretation of the initial labs. In the absence of dialysis and with no complicating comorbidities, this exposure resulted in 7 days spent occupying a critical care bed. The apparent half-life of the methanol was ~37 hours. Given the cost of fomepizole and the nursing resources, this case bolsters the pharmacoeconomic argument in favor of urgent hemodialysis in methanol poisoning.

255. D-dimer as a prognostic biomarker of the outcome in acute corrosive poisoning

Zanina Pereska, Niko Bekjarovski, Lidija
Petkovska, Andon Chibishev, Natasha
Simonovska, Aleksandra Babulovska, Kiril
Naumoski and Kristin Kostadinovski

University Clinic of Toxicology, Ss Cyril and Methodius University,
Skopje, Republic of North Macedonia

Objective: D-dimer (DD) is a fibrin degradation product with high sensitivity for thromboembolism but low specificity and it is increased in other conditions including inflammation [1]. Acute corrosive poisoning induces activation of coagulation system and inflammation [2] and DD can be used as a biomarker of poisoning severity/outcome. The aim of this study was to assess the association of DD concentrations with corrosive poisoning outcome and inflammatory biomarkers.

Methods: The study was retrospective and observational including 17 patients with corrosive poisoning over 1 year period. The DD concentration (enzyme-linked fluorescent assay (Mini VIDAS)) and complete laboratory analysis were obtained within the first 24 hours of the poisoning.

Results: Both genders were equally represented, with average age 53.2±17.6 years and DD 18611.4±17608 ng/mL. Poisoning with acids was registered in 58.8%, 29.4% ingested bases, base salts and other corrosives represented 5.8% each. Fatal outcome

occurred in 8 patients (44.4%) within the first 24 hours. Stenosis of the esophagus and/or stomach developed in 35.3%. There was significantly higher DD ($27067 \pm 18416.4 \text{ ng/mL}$) in patients who died ($Z = -0.2134$, $P < 0.001$) compared to the survivors ($DD = 11847 \pm 14402.99 \text{ ng/mL}$). DD correlated significantly with leucocytes ($\rho = 0.743$, $P > 0.001$) but insignificantly with C-reactive protein (CRP) ($\rho = 0.324$, $P = 0.89$), due to analyzing early CRP values. The prognostic power of DD in predicating fatal outcome was significant and moderate (AUROC (DD) = 0.800, 95%CI 0.595–1.000, $P = 0.033$). Diseased patients had significantly lower hemoglobin ($Z = -2.711$, $P = 0.007$) and platelets ($Z = -2.090$, $P = 0.034$), and increased urea ($Z = -2.310$, $P = 0.021$), creatinine ($Z = -2.845$, $P = 0.04$), activated partial thromboplastin time (aPTT) ($Z = -2.711$, $P = 0.007$), DD ($Z = -2.134$, $P = 0.033$) and lactate dehydrogenase (LDH) ($Z = -3.288$, $P = 0.001$).

Conclusion: The DD was significantly increased in acute corrosive poisoning with fatal outcome and associated with leucocytes as inflammatory biomarkers. Further studies with more participants are needed to assess the usefulness of DD as a prognostic biomarker and its cut off levels as well as its role in the mechanism of corrosive injury.

References

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256. Administration of a Miracle Mineral Solution enema for self-purification: a case report

Álvaro Pineda-Torcuato, Marina
Fernández-Hidalgo, Inés Lourdes
Laborda-Moreu, Gerard Ronda-Roca, Sabina
Aranda-Guerrero, Giuseppe Dominijanni, Ana
Sainz-Herrero, Antonio F. Caballero-Bermejo and
Belén Ruiz-Antorán

Hospital Universitario Puerta de Hierro Majadahonda, Madrid, Spain

Objective: To describe the management of a case of toxicity following the administration of a Miracle Mineral Solution (MMS) enema for self-purification purposes.

Case report: A 56-year-old woman with no relevant medical history presented to the emergency department at 23:00 with rectal bleeding and abdominal pain. She reported administering a Miracle Mineral Solution enema at 13:00 that day, purchased online for nearly €300, intending to “purify” herself. On examination, she was hemodynamically stable and afebrile. Blood tests showed a pH of 7.36, bicarbonate 26.8 mmol/L , lactate 0.5 mmol/L , hemoglobin 13.4 g/dL , and sodium 128 mEq/L , with no other significant abnormalities. Given the suspicion of high toxicity, an abdominal computerised tomography (CT) scan was ordered, and the Spanish Toxicology Information Service recommended rectal lavage with diluted calcium gluconate in normal saline. The CT scan revealed marked, nonspecific circumferential thickening of the rectal ampulla and, to a lesser extent, the sigmoid colon, with oedema and inflammatory changes in the mesorectal fat. There was a retained fluid zone,

but no wall disruption or active bleeding was identified. The patient was informed of the results and advised to remain under observation, however, upon the physician’s arrival, she had left the hospital. She was contacted by phone, informed of the results, and urged to return for monitoring. She returned a few hours later and was admitted with a diagnosis of chemical proctitis and mild hyposmolar hyponatraemia, likely secondary to the enema. After three uneventful days of observation, she was discharged with a prescription for amoxicillin/clavulanic acid and scheduled for an outpatient colonoscopy in one month.

Conclusion: Miracle Mineral Solution (MMS) is a 28% sodium chlorite (NaClO_2) solution in distilled water, which, when mixed with an acid (such as citric acid or hydrochloric acid in gastric juice), produces chlorine dioxide. It is available for purchase on the Internet. MMS gained popularity as a “preventative” agent during the COVID-19 pandemic and is still used by some groups for self-administered purifications. However, it is a highly toxic caustic substance with significant potential for harm.

259. Increase in occupational HAZMAT incidents reported to the Dutch Poisons Information Centre (DPIC) between 2016 and 2023

Anja P. G. Wijnands, Arjen Koppen, Dylan W.
de Lange and Saskia Rietjens

Dutch Poisons Information Center, University Medical Center Utrecht, Utrecht, Netherlands

Objective: Hazardous material (HAZMAT) incidents can harm workers, first responders and the general public, with potentially serious consequences. It is crucial for health and safety management to have insight into the prevalence and circumstances of HAZMAT incidents.

Methods: A retrospective study (2016–2023) was conducted of Dutch Poisons Information Centre (DPIC) consultations regarding HAZMAT incidents with an occupational cause involving multiple patients. Data on patients, exposure and reported symptoms were extracted from the DPIC’s database.

Results: A total of 516 incidents were studied. The number of occupational HAZMAT incidents reported increased from 53 in 2016 to 81 in 2023. Overall, 41% of the incidents (213) involved two patients and in 200 incidents, more than two patients were involved (with a maximum of 50), while in 103 incidents, the exact number of victims was unknown. At least 1840 patients were involved overall, including 161 children. Patients were often exposed by multiple routes. Inhalation was the most common route of exposure (89%), followed by eye contact (19%), skin contact (16%) and ingestion (5%). Incidents often involved exposure to systemic asphyxiants (153), such as smoke (65), carbon monoxide (45) or hydrogen sulphide (33), and acids (111) such as sulphuric acid (58) and hydrogen fluoride ($n = 10$). Only 15% (281) of the 1840 patients were asymptomatic at the time of DPIC consultation and in 25% (465) information on symptoms was unavailable. The most commonly reported symptoms were headache (374, 20%), nausea (222, 12%), dyspnoea (218, 12%), eye irritation (215, 12%), dizziness (192, 10%), mucous membrane irritation (193, 11%), mouth or throat pain (128, 7%) and cough ($n = 122$, 7%). At the time of DPIC consultation, most patients reported only mild to moderate effects. More severe effects were reported incidentally (syncope (12), coma (8), stridor (4), angina pectoris (3), burns (5) and necrosis (3)). Two patients died, one after methanol inhalation, and another after inhalation of an unknown gas released from a container of wood pellets.