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ABSTRACTS

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had used magic mushrooms, the Dutch government asked the "Coordination Centre for Assessment and Monitoring of new Drugs" (CAM) for a risk assessment. *Methods:* The CAM, with experts from scientific institutes involved in monitoring, research, and criminal investigation related to drugs of abuse, performed a risk assessment on hallucinogenic mushrooms according to established procedures: review of available literature, scoring of the risks for individual health, public health, public safety, and organized crime. *Results:* Scientifically, the risk assessment is straightforward: acute toxicity is mainly confined to anxiety or panic attacks and chronic toxicity to the occurrence of flashbacks. The number of incidents reported is low. The risks for disturbing public order and criminal involvement are small. The Amsterdam municipal health department described that in 1 out of 2500 cases of mushroom use, an ambulance was called. Ninety-two per cent of these calls concerned tourists. Only 2 out of 100,000 uses actually led to hospital admission. Tourists are considered a vulnerable group, using magic mushrooms in an unfamiliar setting, sometimes impatiently taking an overdose while waiting for the hallucinogenic effects to occur. The CAM advised the provision of high quality user information especially aimed at tourists.[1] The CAM explicitly warned that prohibiting hallucinogenic mushrooms could create new, more dangerous situations: the use of stronger hallucinating drugs, and possible criminal involvement like hiding psilocybin in chocolates. Nevertheless, the Minister of Health prohibited the selling and use of hallucinogenic mushrooms in 2008. The arguments of the CAM were considered valid, but too difficult to carry out. *Conclusion:* Up till now the NPIC received fewer questions on magic mushroom use, but more on other drugs of abuse like GHB and cocaine. After the prohibition of magic mushrooms in the UK in 2005 its use declined in the first year and remained stable later on. The use of cocaine increased.[2] *References:* 1. Coördinatiepunt Assessment en Monitoring nieuwe drugs. Risicoschatting van psilocine en psilocybine bevattende paddenstoelen (paddos's). Bilthoven 2007. http://www.rivm.nl/bibliotheek/digitaaldepot/cam_paddo_advies.pdf 2. Hoare, J. Drug Misuse Declared: Findings from the 2008/09 British Crime Survey England and Wales. July 2009. http://www.homeoffice.gov.uk/rds/pdfs09/hosb1209.pdf

235. Chronic Digoxin Toxicity, Serum Potassium, and Fab Failure: A Case-control Study

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Objective: In contrast to patients with acute digoxin overdose, the prognostic utility of the serum potassium concentration for patients with chronic digoxin toxicity is unclear. We aimed to evaluate this relationship, since in our practice chronic toxicity is more prevalent than acute digoxin overdose. *Methods:* Study design was retrospective case-control. The setting was a Poison Control Center (PCC) and an urban tertiary referral hospital. Cases were defined as PCC referrals with chronic digoxin toxicity resulting in fatality over a 7-year period (2000–06). Controls were defined as hospitalized patients with PCC referral for chronic digoxin toxicity requiring bedside medical toxicology consultation over a one-year period (2006–07) surviving to hospital discharge. All subjects had digoxin toxicity evidenced by an elevated serum digoxin concentration (SDC), consistent clinical symptoms, abnormal ECG findings, and lack of acute overdose by history. Fab failure was defined as fatality despite administration of an appropriate dose of the antidote. Data for evaluation included demographics, SDC, creatinine, and pre-treatment serum potassium concentration. Computer analysis using SPSS included confidence intervals (CI), t-test (continuous data), Fisher exact test (nominal data), and receiver operating characteristics (ROC). *Results:* During the study period, there were 6 fatalities (cases) and 8 survivors (controls), of whom 5 cases (83%) and 5 controls (63%) received digoxin-specific Fab. Elevated pre-Fab serum potassium was highly associated with fatality (t-test $p < 0.05$). Using a cutoff of 5.0 mEq/L for serum K yielded 100% sensitivity (CI 73–100). The ROC area under the curve was 0.81. There were no statistically significant differences between cases and controls with respect to SDC, creatinine, age, or gender. All 5 Fab failures occurred in patients with the combination of both bradycardia (HR range 22–53) and hyperkalemia (range 5.3–7.5 mEq/L). Limitations of this study include a small number of cases, possible misclassification of chronic toxicity by history, and influence of co-medications on potassium such as diuretics. *Conclusion:* Elevated serum potassium prior to treatment with Fab is associated with fatality in chronic digoxin toxicity. The combination of bradycardia and hyperkalemia predicted Fab failure. Future studies are warranted to confirm these findings.

236. Oxatomide-Induced QTc Interval Prolongation in Pediatric Patients After Single and Repeated Overdose

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Objective. To investigate the ability of oxatomide, predominantly used in paediatric patients in Italy, to affect cardiac repolarisation and to induce QT prolongation. *Methods:* In a retrospective study all cases of paediatric oxatomide overdose referred to Pavia Poison Center over a ten-year period (from January 1999 to December 2008) were analyzed. Circumstances of overdose, symptoms and QTc interval were evaluated for each patient. Serum oxatomide levels were measured using an HPLC method. Lack of information on follow-up for at least 6 hours post overdose was considered an exclusion criterion (193 patients were excluded for this reason). *Results:* 169 patients (mean age 29.3 ± 23.9 months) were included in the study. One hundred and forty patients had ingested a single high dose (group 1), 27 had repeated overdose resulting from regular therapeutic error (group 2); in two patients no data were available. Twenty-nine patients developed QTc prolongation (17.1%): the incidence was significantly higher ($p = 0.02$) among patients of group 2 (9/27, 33.3%, OR 3.18) compared to those of group 1 (19/140, 13.5%). Therapeutic dose of oxatomide is 0.5 mg/kg bid. In group 1 the median ingested dose was 23.4 mg/kg in patients with QTc prolongation (LQT) and 14.4 mg/kg in patients with normal QTc (NQT) ($p = 0.06$). Neurological symptoms (dizziness, drowsiness, extrapyramidal effects, seizures) appeared in 75.9% of patients that manifested LQT (22/29) and 56.4% of NQT patients (79/140) ($p = 0.06$, OR 2.39). Other ECG alterations were present in 20.7% of LQT patients (6/29) and 5.7% of NQT patients (8/140) ($p = 0.02$, OR 4.3). The serum oxatomide level was measured 5 hours after ingestion in 15 patients; the mean levels were 950±760 ng/mL in 9 LQT patients and 593±418 ng/mL in 6 NQT patients. No patients showed dysrhythmias, and in all cases QTc was normal at recovery. *Conclusions:* Overdose of antihistamines has often been associated with prolongation of the QTc interval. However, no data are available on oxatomide in this respect. Our observations indicate that oxatomide poisoning can prolong QTc interval in children, especially after repeated overdose.

237. Assessment of the QT Interval After Antidepressant Overdose

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Objective: Torsade de pointes is a rare complication of drug toxicity. A QT-heart rate nomogram has recently been proposed for risk prediction.[1] This study examined the performance of the nomogram after antidepressant overdose. *Methods:* ECG data were examined retrospectively after antidepressant overdose.[2–4] Ingested doses were expressed as multiples of the defined daily dose; citalopram 20 mg, mirtazapine 30 mg and venlafaxine 100 mg. QTc was calculated by Bazett's formula. *Results:* There were 858 recordings from 541 patients (see Table 1). QT values were above the nomogram in 2.4% (95% CI 1.4 to 4.1%), and more likely to be above the nomogram after citalopram overdose than mirtazapine or venlafaxine (difference 7.0%, 95% CI 2.9 to 11.9%, $p = 0.001$). *Conclusion:* Citalopram is a recognised cause of torsade de pointes whereas venlafaxine and mirtazapine are not. Consistent with this, the nomogram discriminated between agents. The nomogram needs further evaluation in predicting arrhythmia. *References:* 1. Chan A, Isbister GK, Kirkpatrick CM, et al. Drug-induced QT prolongation and torsades de pointes: evaluation of a QT nomogram. QJM 2007; 100:609–15. 2. Waring WS, Good AM, Bateman DN. Lack of significant toxicity after mirtazapine overdose: a five-year review of cases admitted to a regional toxicology unit. Clin Toxicol 2007; 45:45–50. 3. Howell C, Wilson AD, Waring WS. Cardiovascular toxicity due to venlafaxine poisoning in adults: a review of 235 consecutive cases. Br J Clin Pharmacol 2007; 64:192–7. 4. Waring WS, Gray JA, Graham A. Predictive factors for generalized seizures after deliberate citalopram overdose. Br J Clin Pharmacol 2008; 66:861–5.

238. Drugs Associated with Hemorrhagic Pancreatitis in the Food and Drug Administration Adverse Event Database and Mitochondrial Toxicity

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Objective: To identify drugs with a disproportional high postmarketing reporting of hemorrhagic pancreatitis

Table 1. Dose as multiple of the defined daily dose (DDD) as median and interquartile range. QT shown as proportion and 95% confidence interval. P-values are for two-tailed Yates' corrected chi square comparison to the citalopram group

	Citalopram n = 215	Venlafaxine n = 223	Mirtazapine
Ingested dose (DDD)	16 (10–30)	15 (9–28)	15 (8–27)
QTc ≥440 ms	68	41	16
	32% (26–38%)	18% (14–24%)	16% (10–24%)
		P = 0.002	P = 0.004
QTc ≥500 ms	4	2	0
	2% (1–5%)	1% (0–3%)	0% (0–4%)
		P = 0.651	P = 0.392
QT ≥ nomogram	10	3	0
	5% (2–9%)	1% (0–5%)	0% (0–4%)
		P = 0.075	P = 0.060