

Library Watch

substance use
medical aspects

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summer 2009

A fatal poisoning involving Bromo-Dragonfly.

Andreasen MF; Telving R; Birkler RID; Schumacher B; Johannsen M. *Forensic Science International* 183(1-3): 91-96, 2009. (12 refs.)

This paper reports a fatal overdose case involving the potent hallucinogenic drug Bromo-Dragonfly (1-(8-bromobenzo[1,2-b;4,5-b']difuran-4-yl)-2-aminopropane). In the present case, an 18-year-old woman was found dead after ingestion of a hallucinogenic liquid. A medico-legal autopsy was performed on the deceased, during which liver, blood, urine and vitreous humour were submitted for toxicological examination. Bromo-Dragonfly was identified in the liver blood using UPLC-TOFMS, and was subsequently quantified in femoral blood (0.0047 mg/kg), urine (0.033 mg/kg) and vitreous humour (0.0005 mg/kg) using LC-MS/MS. Calibration standards were prepared from Bromo-Dragonfly isolated from a bottle found next to the deceased. The structure and purity of the isolated compound were unambiguously determined from analysis of UPLC-TOFMS, GC-MS, HPLC-DAD, H-1 and C-13 NMR data and by comparison to literature data. The autopsy findings were non specific for acute poisoning. However, based on the toxicological findings, the cause of death was determined to be a fatal overdose of Bromo-Dragonfly, as no ethanol and no therapeutics or other drugs of abuse besides Bromo-Dragonfly were detected in the liver, blood or urine samples from the deceased. To our knowledge, this is the first report of quantification of Bromo-Dragonfly in a biological specimen from a deceased person. This case caused the drug to be classified as an illegal drug in Denmark on 5th December 2007. Copyright 2009, Elsevier Science.

A review of the use of ethyl glucuronide as a marker for ethanol consumption in forensic and clinical medicine.

Palmer RB. *Seminars in Diagnostic Pathology* 26(1): 18-27, 2009. (68 refs.)

Ethyl glucuronide (EtG) is a direct phase-II metabolite of ethanol formed through the UDP-glucuronosyl transferase catalyzed conjugation of ethanol with glucuronic acid. It has been detected in many antemortem and postmortem biological matrices using a variety of analytical methods. Due to its urinary

elimination time, detectability in hair, specificity for ethanol exposure, and low detection limits of assays, the use of EtG has been proposed as a marker of recent ethanol intake in a variety of clinical and legal settings, including medical monitoring for relapse, emergency department patient evaluation, postmortem assessments, and transportation accident investigation. However, challenges associated with factors such as establishing appropriate cut-off levels capable of distinguishing between drinking and nonbeverage sources of ethanol exposure, nonuniform laboratory reporting limits, sample stability, and microbial activity substantially complicate accurate interpretation of results. The following review briefly explores the history, utility, and limitations of FIG in contemporary medical and forensic practice. Copyright 2009, W B Saunders.

Biological markers of drug use in the club setting.

Miller BA; Furr-Holden D; Johnson MB; Holder H; Voas R; Keagy C. *Journal of Studies on Alcohol and Drugs* 70(2): 261-268, 2009. (20 refs.)

Objective: The prevalence of drug and alcohol use among patrons of clubs featuring electronic music dance events was determined by using biological assays at entrance and exit. Method: Using a portal methodology that randomly selects groups of patrons on arrival at clubs, oral assays for determining level and type of drug use and level of alcohol use were obtained anonymously. Patrons provided self-reported data on their personal characteristics. A total of 362 patrons were interviewed at entrance kind provided oral assay data, and 277 provided data at both entrance and exit. Results: Overall, one quarter of all patrons surveyed at entrance were positive for some type of drug use. Based on our exit sample, one quarter of the sample was positive at exit. Individual drugs most prevalent at entrance or exit included cocaine, marijuana, and amphetamines/stimulants. Only the amphetamine/stimulant category increased significantly from entrance to exit. Drug-using patrons arrive at the club already using drugs; few patrons arrive with no drug use and leave with detectable levels of drug use. Clubs vary widely in drug-user prevalence at entrance and exit, suggesting that both events and club policies and practices may attract

different types of patrons. Approximately one half of the total entrance sample arrived with detectable alcohol use, and nearly one fifth arrived with an estimated blood alcohol concentration of .08 or greater. Based on our exit sample data, one third of patrons were intoxicated, and slightly less than one fifth were using both drugs and alcohol at exit. Clubs attract a wide array of emerging adults, with both genders and all ethnicities well represented. Clubs also attract emerging adults who are not in college and who are working full time. Conclusions: At clubs featuring electronic music dance events, drug use and/or high levels of alcohol use were detected using biological assays from patrons at entrance and exit from the clubs. Thus, these clubs present a potentially important location for prevention strategies designed to reduce the risks associated with drug and alcohol use for young people. Combined substance use may prove particularly important for prevention efforts designed to increase safety at clubs. Personal characteristics do not identify drug users, suggesting that environmental strategies for club safety may offer more promise for promoting health and safety. Copyright 2009, Alcohol Research Documentation Center.

Effect of binge drinking on the liver: An alarming public health issue?

Mathurin P; Deltenre P. *Gut* 58(5): 613-617, 2009. (55 refs.)

Alcohol consumers show strong variations in demographic characteristics, alcohol intake, frequency, duration and profile of consumption. Individuals consuming up to two drinks per day (men) or one drink per day (women) are defined as moderate drinkers and do not have an increased risk compared to abstainers. Conversely, a high-risk pattern, defined as daily consumption above those limits, or binge drinking episodes, cause health, personal and social problems. This definition separates chronic drinkers from binge drinkers, as their drinking patterns are different. Binge drinking implies "drinking too much too fast". well-known consequences of binge drinking include unintentional injuries, interpersonal violence, fetal alcohol syndrome, child neglect, loss of productivity, suicide, sexually transmitted diseases and unintended pregnancy. This review compiles experimental, clinical and epidemiological data on the binge drinking phenomenon. Binge drinking is a major public health issue that can no longer be considered simply a momentary risk factor of behavioural concerns, but must now be viewed in light of long-term consequences, such as alcohol-induced liver disease. Binge drinking has a deleterious effect on the liver exacerbated by repeated episodes. The drastic

increase in liver cirrhosis and mortality rates in the UK is particularly alarming. The binge phenomenon is now spreading throughout young populations in almost all Western countries. Studies specifically focusing on the risk threshold for development of alcohol cirrhosis in binge drinkers are warranted. Copyright 2009, BMJ Publishing Group.

Genetics of dopamine receptors and drug addiction: A comprehensive review. (review).

Le Foll B; Gallo A; Le Strat Y; Lu L; Gorwood P. *Behavioural Pharmacology* 20(1): 1-17, 2009. (307 refs.)

Drug dependence is a chronic, relapsing disorder in which compulsive drug-seeking and drug-taking behaviours persist despite serious negative consequences. Addictive substances, such as opioids, ethanol, psychostimulants and nicotine, induce pleasant states or relieve distress, effects that contribute to their recreational use. Dopamine is critically involved in drug addiction processes. However, the role of the various dopaminergic receptor subtypes has been difficult to delineate. Here, we will review the information collected implicating the receptors of the D-1 family (DRD1 and DRD5) and of the D-2 family (DRD2, DRD3 and DRD4) in drug addiction. We will summarize the distribution of these receptors in the brain, the preclinical experiments carried out with pharmacological and transgenic approaches and the genetic studies carried out linking genetic variants of these receptors to drug addiction phenotypes. A meta-analysis of the studies carried out evaluating DRD2 and alcohol dependence is also provided, which indicates a significant association. Overall, this review indicates that different aspects of the addiction phenotype are critically influenced by dopaminergic receptors and that variants of those genes seem to influence some addiction phenotypes in humans. Copyright 2009, Lippincott, Williams & Wilkins.

Hormones and drinking behaviour: New findings on ghrelin, insulin, leptin and volume-regulating hormones. An ESBRA Symposium report.

Addolorato G; Leggio L; Hillemecher T; Kraus T; Jerlhag E; Bleich S. *Drug and Alcohol Review* 28(2): 160-165, 2009. (40 refs.)

There is growing evidence for a role of appetite-related peptides and volume-regulating hormones in alcoholism. In particular, recent evidence has suggested that hormones, such as ghrelin, insulin and leptin and volume-regulating hormones, could play a role in alcohol-seeking behaviour. The goal of this review is to discuss the results of recent preclinical and clinical investigations on this topic. The findings

indicate that neuroendocrinological mechanisms are potentially involved in the neurobiology of alcohol craving. Accordingly, research on this topic could lead to possible development of new therapeutic approaches in the treatment of patients with alcohol problems. Copyright 2009, Taylor & Francis.

Packers, pushers and stuffers-managing patients with concealed drugs in UK emergency departments: A clinical and medicolegal review. (review).

Booker RJ; Smith JE; Rodger MP. *Emergency Medicine Journal* 26(5): 316-320, 2009. (35 refs.)

Body packing, pushing and stuffing are methods by which illicit drugs may be carried within the human body. Patients involved in these practices may present UK emergency departments with complex medical, legal and ethical considerations. This review article examines not only the evidence behind the clinical management of these patients, but also the legal powers afforded to the authorities to authorise the use of intimate searches and diagnostic imaging for forensic purposes. Serious complications from concealed drug packets are now rare, and most asymptomatic patients may be safely discharged from hospital after assessment. Emergency surgery is indicated for body packers with cocaine poisoning and for some cases of heroin poisoning. Urgent surgery is indicated for obstruction, perforation, the passage of packet fragments and failure of conservative treatment. Guidance is given for doctors who are faced with requests from the authorities to perform intimate searches and diagnostic imaging for forensic purposes. Copyright 2009, BMJ Publishing.

Injecting-related injury and disease among clients of a supervised injecting facility.

Salmon AM; Dwyer R; Jauncey M; van Beek I; Topp L; Maher L. *Drug and Alcohol Dependence* 101(1/2): 132-136, 2009. (54 refs.)

Background: The process of drug injection may give rise to vascular and soft tissue injuries and infections. The social and physical environments in which drugs are injected play a significant role in these and other morbidities. Supervised injecting facilities (SIFs) seek to address such issues associated with public injecting drug use. Aims: Estimate lifetime prevalence of injecting-related problems, injury and disease and explore the socio-demographic and behavioral characteristics associated with the more serious complications. Design, Setting, Participants: Self-report data from 9552 injecting drug users (IDUs) registering to use the Sydney Medically Supervised Injecting Centre (MSC). Findings: Lifetime history of either injecting-related problems (IRP) or injecting-

related injury and disease (IRID) was reported by 29% of the 9552 IDUs; 26% (n = 2469) reported ever experiencing IRP and 10% (n = 972) reported IRID. Prevalence of IRP included difficulties finding a vein (18%), prominent scarring or bruising (14%) and swelling of hands or feet (7%). Prevalence of IRID included abscesses or skin infection (6%), thrombosis (4%), septicaemia (2%) and endocarditis (1%). Females, those who mainly injected drugs other than heroin, and those who reported a history of drug treatment, drug overdose, and/or sex work, were more likely to report lifetime IRID. Frequency and duration of injecting, recent public injecting, and sharing of needles and/or syringes were also independently associated with IRID. Conclusions: IRPs and IRIDs were common. Findings support the imperative for education and prevention activities to reduce the severity and burden of these preventable injecting outcomes. Through provision of hygienic environments and advice on venous access, safer injecting techniques and wound care, SIFs have the potential to address a number of risk factors for IRID. Copyright 2009, Elsevier Science.

Hypogonadism in men receiving methadone and buprenorphine maintenance treatment.

Hallinan R; Byrne A; Agho K; McMahon CG; Tynan P; Attia J. *International Journal of Andrology* 32(2): 131-139, 2009. (34 refs.)

The aim of this study was to determine the prevalence and investigate the aetiology of hypogonadism in men on methadone or buprenorphine maintenance treatment (MMT, BMT). 103 men (mean age 37.6 +/- 7.9) on MMT (n = 84) or BMT (n = 19) were evaluated using hormone assays, body mass index (BMI), serological, biochemical, demographic and substance use measures. Overall 54% of men (methadone 65%; buprenorphine 28%) had total testosterone (TT) < 12.0 nm; 34% (methadone 39%; buprenorphine 11%) had TT < 8.0 nm. Both methadone- and buprenorphine-treated men had lower free testosterone, luteinising hormone and estradiol than age-matched reference groups. Methadone-treated men had lower TT than buprenorphine-treated men and reference groups. Prolactin did not differ between methadone, buprenorphine groups, and reference groups. Primary testicular failure was an uncommon cause of hypogonadism. Yearly percentage fall in TT by age across the patient group was 2.3%, more than twice that expected normally. There were no associations between TT and opioid dose, cannabis, alcohol and tobacco consumption, or chronic hepatitis C viraemia. On multiple regression higher TT was associated with higher alanine aminotransferase and

lower TT with higher BMI. Men on MMT have high prevalence of hypogonadotropic hypogonadism. The extent of hormonal changes associated with buprenorphine needs to be explored further in larger studies. Men receiving long term opioid replacement treatment, especially methadone treatment, should be screened for hypogonadism. Wide interindividual differences in methadone metabolism and tolerance may in a cross-sectional study obscure a methadone dose relationship to testosterone in individuals. Future studies of hypogonadism in opioid-treated men should examine the potential benefits of dose reduction, choice of opioid medication, weight loss, and androgen replacement. Copyright 2009, Wiley-Blackwell.

Impact of body weight on the relationship between alcohol intake and blood pressure.

Wakabayashi I. *Alcohol and Alcoholism* 44(2): 204-210, 2009. (22 refs.)

Aims: The reduction of habitual alcohol drinking is recommended for the prevention of hypertension. Daily or weekly alcohol consumption, which is used for evaluation of the effects of alcohol drinking on blood pressure, is usually not corrected by body weight. In this study, the influence of body weight on the relationship between alcohol intake and blood pressure was investigated. Methods: The subjects (27,005 healthy men at ages of 35-54 years) were divided into four groups by average daily ethanol intake [non-, light (< 15 g per day), moderate (>= 15 and < 30 g per day) and heavy (>= 30 g per day) drinkers]. The subjects were also divided into four quartile groups by body weight. Results: Alcohol intake and the percentage of drinkers were not different in the four quartile groups of body weight. In the first and second quartiles of body weight, systolic and diastolic blood pressures were significantly higher in moderate and heavy drinkers than in non-drinkers, while systolic and diastolic blood pressures in the fourth quartile of body weight were significantly higher in heavy drinkers than in non-drinkers but were not significantly different in moderate drinkers and non-drinkers. The differences in systolic or diastolic blood pressure between non-drinkers and moderate drinkers and between non-drinkers and heavy drinkers became greater as body weight decreased. These results were not altered when age and smoking history were adjusted. Conclusions: The results suggest that body weight modifies the relationship between alcohol

consumption and blood pressure and thus should be taken into account when effects of alcohol on blood pressure are considered. Copyright 2009, Oxford University Press.

Clinical evidence of herb-drug interactions: A systematic review by the Natural Standard Research Collaboration. (review).

Ulbricht C; Chao W; Costa D; Rusie-Seamon E; Weissner W; Woods J. *Current Drug Metabolism* 9(10): 1063-1120, 2008. (1334 refs.)

To evaluate the pharmacokinetics and adverse effects of medicinal herbs, as well as clinical evidence of herb-drug interactions. Electronic searches were conducted in multiple databases, including MEDLINE, EMBASE, the Cochrane Library, CINAHL, NAPRALERT, International Pharmaceutical Abstracts, CANCELIT, CISCOS, and HerbMed. Search terms used included common names, scientific names, and synonyms for the herbs and their primary active constituents. Bibliographies of relevant articles were also searched by hand to obtain additional references. No restrictions were placed on language or quality of publications. All literature collected pertained to adverse effects, pharmacokinetics, and suspected or confirmed cases of herb-drug interactions. Over 80 herbs or botanicals (including plants, fungi, algae, and common constituents) were identified that had clinically significant interactions with prescription and over-the-counter drugs. Interestingly, herbs beginning with the letter "g" (garlic, ginger, ginkgo, and grapefruit) were among the herbs most commonly involved in herb-drug interactions. Drugs with anticoagulant/ antiplatelet activity (e. g. warfarin, aspirin) were frequently implicated in herb-drug interactions, with documented interactions with over 30 herbs and herbal products. Because many herbs have demonstrated adverse effects on the liver, the potential for interaction with hepatotoxic agents (such as acetaminophen) is also significant. Clinical outcomes of reported herb-drug interactions ranged from mild to severe. Of note, fatalities (though rare) have occurred with concomitant ephedra and caffeine use. As herbal products (and dietary supplements in general) continue to grow in popularity, patients and health care providers should be vigilant of potential herb-drug interactions. Copyright 2008, Bentham Science Publications.