Alcoholism
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Highlights of the Issue

Alcohol's Detrimental Effects on the Sense of Smell

Researchers know that alcohol abuse can lead to Korsakoff's syndrome, a severe mental disorder characterized by memory loss and disorientation. Several studies have also shown that Korsakoff's syndrome is associated with olfactory deficits, specifically, dysfunctions in odor identification, discrimination, memory, sensitivity, and intensity. Less is known, however, about olfactory functioning in nonamnesic and nondemented alcoholics.

Researchers examined two groups that were matched for age, gender and smoking status: 30 alcohol-dependent patients (16 males, 14 females) and 30 healthy controls (16 males, 14 females). Olfactory performance was assessed unirhinally (one nostril at a time) using the "Sniffin' Sticks," pen-like odor-dispensing devices. Results were divided into three categories – odor threshold, discrimination and identification – and also added together for a composite (TDI) score.

The findings indicate that olfactory dysfunction is common among nonamnesic and nondemented alcoholics. The alcohol-dependent patients showed significantly reduced olfactory sensitivity (a higher threshold), discrimination and identification when compared to the controls. These deficits were not related to age, gender, or duration of abstinence from alcohol; nor were they attributable to smoking or general cognitive abilities. Researchers also found that lower composite scores were associated with longer periods of regular alcohol intake, as well as higher values of gamma-glutamyl-transferase (GGT), an enzyme that indicates liver injury.

Reduced Olfactory Sensitivity, Discrimination and Identification in Patients with Alcohol Dependence. C.I. Rupp, M. Kurz, G. Kemmler, D. Mair, A. Hausmann, H. Hinterhuber, W.W. Fleischhacker (pages 432–439).

Testing for Covert Alcohol Use

Accurate and timely detection of covert alcohol use can be applied to a wide range of situations: identifying patients in treatment settings who may have lapsed or relapsed; helping employers ensure that transportation workers are alcohol-free; and enabling licensing boards to monitor health professionals who may be alcohol dependent. This study assesses the ability of two potential markers, ethyl glucuronide (EtG) and phosphatidyl ethanol (PEth), to detect recent covert alcohol use under controlled conditions. These emerging markers were compared to traditional markers like ethanol, GTT, MCV, and CDT.

Researchers followed 35 forensic psychiatric inpatients (32 males, 3 females), who were housed in a closed ward, for 12 consecutive months. All of the patients were substance-dependent and had committed a substance-related offense, but were allowed under German law to be committed for monitoring and treatment in lieu of jail. In the later stages of therapy, patients were allowed to begin social reintegration during weekdays and on the weekends. During the course of the study, complementary urine, breath and blood samples were collected both randomly and regularly from the patients at various intervals. Patients were also interviewed at least once per week regarding their alcohol consumption.

Of 146 urine samples collected, 14 tested positive for EtG. In all 14 cases, patients reported alcohol consumption of between 40–200 grams of alcohol (the equivalent of 3-15 standard drinks; e.g., 400 ml–2 L of wine) in the 12–60 hours prior to testing. There was no self-reporting of alcohol consumption in the remaining 132 cases. PEth did not test positive in any of the blood samples, thereby excluding regular intake of larger amount of alcohol. In short, EtG appears to be a highly effective and sensitive marker of recent alcohol use. The health, social, and socioeconomic benefit arising from the use of these markers is hard to overestimate. Note: The lapses in abstention from alcohol occurred during the times of social reintegration.

Ethyl Glucuronide Discloses Recent Covert Alcohol Use Not Detected by Standard Testing in Forensic Psychiatric Inpatients. F.M. Wurst, R. Vogel, K. Jachau, A. Varga, C. Alling, A. Alt, G.E. Skipper (pages 471–476).

Neighborhood Alcohol Outlets

Alcohol use is clearly linked to problems among American youth and young adults. Of the more than 6,000 youth (ages 15 to 20) who died in motor vehicle crashes in 2000, nearly 40% (2,339) of those fatalities were alcohol-related, according to the National Highway Traffic Safety Administration. According to national-level analysis from 1998, youth and young adults (ages 15 to 29) committed 37% of violent incidents involving alcohol (as recorded by the police). Providing alcohol to minors and intoxicated patrons is illegal, yet it continues and likely contributes to these statistics. This study examines how clerk/server, outlet, and neighborhood characteristics are related to alcohol sales to people who are underage or already intoxicated.

Researchers used three procedures to collect data from randomly selected alcohol establishments in a city in northern California. The first involved "scouting" establishments to obtain information on neighborhood and premise characteristics. The second involved sending pseudo-intoxicated male customers to on-premise establishments (n = 135) to determine rates of alcohol service; while the third involved sending of-age female customers who appeared to be minors to off-premise establishments (n = 139) to determine rates of alcohol sales.

Apparent minors were able to purchase alcohol 39% of the time, while pseudo-intoxicated customers were served alcohol 58% of the time. Apparent minors were more likely to purchase alcohol in neighborhoods with higher percentages of Hispanic residents. Pseudo-intoxicated customers were more likely to purchase alcohol when the clerk/server was male and appeared to be younger than 30 years of age. Both forms of illegal sales were more likely in highly populated areas.

Evaluating Alcohol Access and the Alcohol Environment in Neighborhood Areas. B. Freisthler, P.J. Gruenewald, A.J. Treno, J. Lee (pages 477–484).

Examining Alcohol's Impact on HIV Progression

Research has shown that alcohol abuse among people with the human immunodeficiency virus (HIV) is significant; one study found that 41% of HIV-infected patients met the criteria for alcoholism. Although both alcohol abuse and HIV infection compromise immune function, the consequence(s) of both conditions together is poorly understood. This study uses an animal model – simian immunodeficiency virus (SIV) infection of rhesus monkeys – to examine the combined effects of chronic, binge alcohol consumption on the primary stage of HIV/SIV infection.

Twenty-two male rhesus monkeys, four to six years of age, were given either alcohol or sucrose for four days per week for three months. The alcohol doses were individualized in order to achieve plasma alcohol concentrations of 230–250 mg/100ml for a five-hour period. After three months, seven alcohol-treated and seven sucrose-treated monkeys were infected with SIV; four alcohol-treated and four sucrose-treated monkeys were not. Blood samples were drawn prior to alcohol/sucrose infusions, one month prior to SIV infection, and then on days 6, 13, 20, 27, 42, and 61 post-SIV infection.

Approximately one week after SIV infection, there was a 64-fold increase of the SIV virus in the blood of the alcohol-treated monkeys compared to the sucrose-treated monkeys. Alcohol consumption also enhanced lymphocyte turnover (as assessed by expression of the cell cycle protein marker Ki67) in SIV-infected monkeys during the early stage of infection, which may contribute to the observed increase in viral load. The study authors hypothesize that alcohol consumption may increase host susceptibility to HIV/SIV infection.

The Effect of Chronic Binge Ethanol Consumption on the Primary Stage of SIV Infection in Rhesus Macaque. G.J. Bagby, D.A. Stoltz, P. Zhang, J.K. Kolls, J. Brown, R.P. Bohm, Jr., R. Rockar, J. Purcell, M. Murphey-Corb, S. Nelson (pages 495–502).

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