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ALCOHOL ACTS ON BIOGENIC AMINES

Atlantic City—"Metabolism of biogenic amines which undergo monoamine oxidation may be altered by ingestion of alcohol," Dr. Harold Brown, professor of Medicine, Baylor University College of Medicine, reported at the annual convention of the American Medical Association.

In the experiments which were carried out with human volunteers, carbon-14, labeled serotonin and norepinephrine were administered, and excreted metabolic products were measured. The same procedure was then repeated on another day after 60 ml. of ethanol were taken.

It was found that without alcohol, about 82 percent of the ingested serotonin was excreted into the urine as 5-roxindoleacetic acid, and about two

(Continued on page 3, col. 1)

DISCUSSES ROLE OF COMPUTER AS MMPI INTERPRETER

"It knew, for instance, that when the depression scale alone was high the patient was likely to escape from his depression by engaging in anti-social behavior. It also knew that such a patient suffered intense guilt as a result of his unacceptable behavior and that he was likely to become an alcoholic."

Speaking of the computer which he programmed to interpret data derived from the Minnesota Multiphasic Personality Inventory, Raymond D. Fowler, Jr., Chairman of the Department of Psychology at University of Alabama, asserted that after five years of "teaching," the machine was able to render personality interpretations of a more consistently high quality than those of a human clinician. "I may have a bad day," he said, "on which I am tired or ill or irritable and I may as a consequence do a poor job of interpretation. The computer," he went on, "never

(Continued on page 4, col. 1)

ALCOHOLIC WORKERS SUFFER MORE ILLS

Atlantic City—Hypertension and cirrhosis of the liver were much more prevalent among drinkers than among controls in a study of 922 employees of a large industrial corporation, reported to the recent meeting of the American Medical Association.

Differences in other diseases were less pronounced, but the data suggested that drinkers also had a greater risk of developing stomach ulcers, duodenal ulcers, asthma, diabetes mellitus, gout, neuritis, cerebrovascular disease and heart disease.

The study conducted by Sidney Pell, Ph. D., and C. A. D'Alonzo, M.D., of the medical division of E. I. du Pont de Nemours & Co., included known cases of alcoholism; known cases, not arrested; and suspected cases. For each case, a control was selected who worked at the same installation, and who was of the same sex, payroll classification etc. Both groups were selected from more than 75,000 employees.

Of the 922 workers, there were 226 uncontrolled alcoholics, 390 suspected excess drinkers and 306 arrested cases. Problem drinking was much more common among male employees—about 2½ times that of women.

Among drinkers, there were 333 hypertensives compared with 148 among the controls. A much higher prevalence of hypertension was found in each of the three categories of drinkers as compared with their respective matched control groups. The excess was as great among the suspected as among the known cases. In the opinion of the researchers, this suggests that if high alcohol intake is responsible for the

(Continued on page 4, col. 2)

ADDICTION, ALCOHOL LINKAGE DEPLORED AS 'UNDESIRABLE'

"The rush to combine the studies of drug addiction and alcoholism under the general heading of 'addictions' would create a field so broad in its implications that scientific research may be hampered by it." This warning comes from Dr. David J. Pittman, who terms the current vogue of lumping alcoholism together with drug abuse "a highly questionable oversimplification."

Professor Pittman, chairman of the Department of Sociology at Washington University in St. Louis, points to several distressing instances of such amalgamation in projects of the World Health Organization, the American Medical Association, and individual state programs in the U.S. He offers a number of culturally-oriented observations to back up his contention that such a combination is unwarranted and undesirable.

The rationale that both drug addiction and alcoholism are essentially equivalent because both involve psychological and physical dependence is a simplistic approach, he claims, that can only muddle research in each field.

And, he adds, the assumption that the pharmacological effects of both drugs and alcohol and the personality characteristics of their users are alike is, at best, dubious.

If a basic similarity does exist in all addictions, Professor Pittman asks, "why not include in this study obesity (food addiction), smoking (cigarette addiction), nymphomania (sex addiction), certain ulcer and coronary cases (work addiction), and frequent attenders of church (religious addiction)?" Some kinds of dependency on certain facets of our environment are necessary for normal existence, he reasons, while other kinds represent behavior pathology. Surely, the general criterion of 'dependence' is not a sufficient axis around which a discipline can be built.

It is the sociocultural factors involved in usage of, and reactions to, drugs and alcohol which Professor Pittman feels are most sadly neglected in the "rush to combine." Different agents to which individuals become addicted carry with

(Continued on page 2, col. 3)

Editorial:

ALCOHOL AND/OR DRUGS

The recent meeting of the Scientific Group of the International Council on Alcoholism in Amsterdam, Holland, took up the important question of similarities and dissimilarities between dependence on alcohol and dependence on drugs. The importance of this move is underscored by the position taken by the World Health Organization. WHO has proposed a joint approach to alcoholism and other drug abuse and has delineated the syndromes of abuse. In that delineation, one subcategory is drug dependence, alcohol type.

There is no question but that alcohol as a drug produces central nervous system effects, exhibits the phenomenon of tolerance and has a well-defined withdrawal syndrome. Of ominous significance is the reported impression that 80 to 90 per cent of people recently asking help of Alcoholics Anonymous "Intergroup" for their alcoholism also have a problem with "pills". Some central nervous system pharmacological research can certainly gain by cross-fertilization between work on barbiturates, tranquilizers, energizers, opiates and alcohol. It is also true that many alcoholism facilities, because of their familiarity with combined medical, social and psychological problems and their emphasis on rehabilitation, are being asked to take on some responsibilities for problems of narcotic addiction and drug abuse. There is also a definite degree of overlap between the various dependencies.

However, the considerations which make alcoholism unique are many. Primary among these are the legal and demographic-cultural factors. Alcoholic beverages are legally obtainable and are accepted as a part of social life throughout the world. Pills are not legally obtainable without prescription and the drug traffic is a completely illegal phenomenon. This observation is so obvious that it would not bear repetition were it not so much de-emphasized in the current literature. It is a factor extremely important in the "mental set" of the individual who becomes involved with alcohol or with drugs or pills.

The person who seeks relief of anxiety through sedatives, be he alcoholic or not, usually does so with the unknowing collaboration of his physician, for whom further education on these subjects should be made available.

The demographic considerations include a prime factor—the number of alcoholics versus the number of addicts and pill takers. Although the latter has

been increasing at an alarming rate one does not see an estimate for all of the United States of over 200,000. The estimate of 5,000,000 alcoholics, however, has been indicated only as an understatement.

Moreover, although the age of newly-found alcoholics is seemingly always decreasing, it is still true that the majority are in the middle-age group from thirty to fifty. Those are the years of job and family responsibilities—and the syndrome is full-blown in ten years. The drug addict, the hippie and the teenybopper in the U.S., in Canada and increasingly elsewhere, are in their teens and early twenties and have not yet taken up positions of responsibility to society.

From the physical point of view, alcohol is the only one of the implicated drugs to have caloric value and, therefore, a place as a food, bad food though it is. Its quality as a beverage is also lacking in the other agents. And far more importantly, alcohol has many toxic effects on the body as a whole, the most outstanding being the development of Laennec's cirrhosis. This disease has no counterpart in the drug and narcotic problem. Current and future research must be supported to counter its ravages.

Phenomena of dependence on barbiturates, amphetamines, tranquilizers and narcotics have similarities to those of dependence on alcohol. They are also, however, tied in various degrees of similarity to dependence on food, cigarettes, gambling and compulsive sex behaviour. The "experience seekers" dealing with LSD and similar drugs are playing with something which is not addicting or dependency-forming in itself. Though there is a withdrawal syndrome with both alcohol and with opiates, the two are completely different, bespeaking an entirely different chemical and physiological reaction. Barbiturates induce a withdrawal syndrome which, like alcohol, includes convulsions but hallucinosis is rare.

The movement to deal with alcoholism as a disease and to gain acceptance of this concept has been a long and painful fight for twenty years. Widespread support and interest recently have been increasing in industry, in the medical profession, and in the community as a whole. The problems of dealing with alcoholism correspond only at certain interfaces with those of other drugs. Drug abuse in the two different categories — opiates and LSD-marijuana,

the latter popular with the hippie subculture — has aroused widespread alarm recently, but its control, treatment and investigation pose different problems than with alcohol.

Even the stigma associated with both conditions links them no more closely than the stigma attached to birth control links it to venereal disease. Those interested in the research, care and treatment of alcoholism would not like to revive the decreasing stigma of alcoholism by associating it with the stigma of drug addiction, unrealistic as each stigma may be. Though widespread and justified alarm about the drug problem exists, investigators would not like to trade on it for research money. The unfortunate result would be to dilute the interest in alcoholism with other sometimes unrelated topics.

Weighing the similarities and differences, the Scientific Group of the International Council on Alcoholism has not yet come up with its final statement on the subject. It is hoped that the exploration of similarities will provide beneficial results for both and that the differences will not be submerged to the detriment of either.

ADDICTION, ALCOHOL

(Continued from page 1)

them different sociocultural meanings and values. Despite what pharmacological and psychological similarities might ultimately be found to exist, the social reactions to alcohol and drugs and the abusers thereof vary tremendously. In combining the two addictions, he warns, we tend to ignore or place outside the province of research the important factors which differentiate the alcoholic from the drug addict.

Professor Pittman points to the differences in the legal and social status of drugs and alcohol in the U.S. to substantiate his position.

Cross-cultural differences as well militate against a combined approach to drug and alcohol abuse, argues Professor Pittman. The sociological statuses of these practices vary widely between cultures, from the opium dens of the orient to the bottle-strewn streetcorners of an American slum.

"Socially," sums up Professor Pittman, "we are dealing with disparate phenomena in considering drug and alcohol usage patterns. From my perspective, it is theoretically and empirically unwise to combine the study of all forms of addiction, for the social definitions of the conditions, the values attached to them by society, and the social responses to different forms of addiction vary extensively."

RESEARCH AND REVIEW

Adipose Tissue

The ethanol-induced mobilization of free fatty acids (FFA) in adipose tissue has long been suspected as a factor in the pathogenesis of alcoholic fatty liver. To uncover the source of the fatty acids which accumulate in the liver, and to determine just what role alcohol plays in the process, two New York City researchers administered controlled doses of ethanol to five alcoholics while measuring variations in their plasma concentrations of glucose, glycerol, and FFA.

Dr. Lawrence Feinman and Charles S. Lieber of Cornell University Medical College began by administering alcohol — as a 15% solution of ethanol in a noncaloric carrier beverage — to their subjects, who had abstained from alcohol for at least three weeks and fasted overnight. For one hour, the dosage was 1 g/kg per hour, divided in four equal portions; for the next half hour, 0.5 g/kg; for a final half hour, 0.1 g/kg. An indwelling Cournand needle placed in the left brachial artery provided continuous blood samples, which were immediately cold-spun to obtain plasma.

The Cornell investigators sought to establish whether plasma glycerol concentrations could in fact be taken as a measure of adipose tissue lipolysis more specific than plasma FFA levels. For although fatty acids formed by tissue-lipolysis may be released into the blood stream or reutilized *in situ*, most of the glycerol produced is released, since the glycerokinase necessary for glycerol utilization is practically absent from adipose tissue.

The plasma obtained at various intervals from the volunteers — who soon became mildly euphoric — was analyzed for FFA, glycerol, and glucose. Within the first half hour of alcohol ingestion, plasma FFA and glycerol both fell

abruptly from baseline levels. The plasma glucose levels, however, remained relatively stable.

Drs. Feinman and Lieber suggest that the similar drops in plasma FFA and plasma glycerol levels might be the result of either increased glycerol uptake from the blood by the liver, or its decreased release into the blood, possibly from adipose tissue. But, they point out, increased uptake is an unlikely explanation since the liver has been shown to account for the drop. Their data point, then, to a diminished release of glycerol from adipose tissue that occurs secondary to a depression of lipolysis. This is the first *in vitro* study in which suppression of adipose glycerol release was achieved with such low concentrations of alcohol.

Direct action of ethanol itself on adipose tissue is not the cause of decreased glycerol release, say the investigators. They suggest that the effect is mediated by a metabolite of ethanol or is the result of a metabolic alteration caused by hepatic alcohol oxidation which only secondarily affects adipose tissue.

Assess Drugs

Atlantic City—A combination of paraldehyde and chloral hydrate has been found most effective and best tolerated in the treatment of tremulous states, acute hallucinosis, and delirium tremens incident to alcohol withdrawal.

In a presentation to the section of Internal Medicine at the AMA convention, Drs. Thomas Colbert, Carlos L. Sanz, Harold D. Rose and Thomas H. Leitschuh of the Wood Veterans Administration Hospital and Marquette University School of Medicine reported on a clinical study of 49 patients.

Thirteen were treated with promazine hydrochloride and 12 each with paraldehyde and chloral hydrate, alcohol or chlordiazepoxide hydrochloride.

ALCOHOL ACTS ON AMINES

(Continued from page 1)

per cent as the reduction product 5-hydroxytryptophol. This appeared in the urine primarily as 0-glucuronide. The percentage of C-14 excretion as 5-HIAA dropped to 42 after ingestion of alcohol and the 5-hydroxytryptophol fraction increased to 42 per cent.

Dr. Brown observed that after infusion of C-14 norepinephrine, there were changes in excretion of C-14 vanillylnandelic acid and its corresponding alcohol, 3-methoxy-4-hydroxyphenylglycol. The first eight hours after infusion, 52 per cent of the excreted activity repre-

sented the acid metabolite and 11.6 per cent the glycol. After alcohol intake, the acid figure decreased to 28.6 per cent and the glycol went up to 26.7 per cent.

Summing up, Dr. Brown declared: "These observations raise the possibility that effects of agents affecting central nervous system function may be mediated through their alterations of the metabolism of neurohumors. Although we have presented data on the end products of metabolism excreted in the urine, there is evidence that the reactions discussed take place in brain tissue."

The combination of paraldehyde and chloral hydrate appeared effective in preventing development of delirium tremens. The other drugs tested were comparatively ineffective and frequently associated with serious complications.

"The use of chlordiazepoxide and promazine has been supported largely by uncontrolled studies," the researchers declared, adding that some studies failed to define the syndromes treated and the criteria of evaluation.

Significantly, therapeutic failures with promazine were reversed after administration of paraldehyde and chloral hydrate.

Lack of Knowledge

Failure of many professions to view alcoholism primarily as a medical problem of major proportions seriously hampers organized efforts in this field, Dr. J. Thomas Millington, director, Bureau of Health Services, State Dept. of Health, Pennsylvania, says in the *American Journal of Public Health*, Vol 57, No. 6, p. 967. Lack of basic knowledge about alcoholism, including its magnitude, its epidemiologic pattern and its etiology, combined with the absence of clear-cut criteria for diagnosis, obstruct progress in its control.

In Pennsylvania, he said, about half of the hospitals will accept only alcoholics with a concealed diagnosis.

MEETINGS

SEPT. 24-28, 1967: 18th Annual Meeting of the North American Assn. of Alcoholism Programs at the Sheraton-Chicago Hotel, Chicago, Ill.

LITERATURE

Alcoholism

David J. Pittman, Ed., Harper and Row, New York, 1967. 286 pp. Paper, \$3.75. Readers in Social Problems Series. Seventeen papers.

HOW TO LIVE WITH AN ALCOHOLIC

Jorge Vallés, M.D., Simon & Shuster, New York, N.Y. 1967. \$1.00

Alcoholism in Industry

A fully self-instructional programmed learning course for working supervisors at all levels. \$3.00 per course. No teaching machine or other equipment necessary. Resources Development Corporation, Box 591, East Lansing, Michigan 48823.

Quarterly Journal of Studies On Alcohol, June 1967

We call your attention to the following articles:

- Aberrant Rorschach Perceptions of Alcoholics, Marie Mabry-Hall, Ph.D.
- Normal Drinking by Persons Reporting Previous Problem Drinking, Margaret B. Bailey, D.S.W., and Jean Stewart, M.S.W., M.L.S.

DISCUSSES ROLE OF COMPUTER AS MMPI INTERPRETER

(Continued from page 1)

has such days and thus does its best each time."

Dr. Fowler told those attending the thirteenth International Institute on the Prevention and Treatment of Alcoholism, held in Zagreb, Yugoslavia, that the programmed interpretations resulted from his part-time service as a clinical psychologist in an outpatient alcoholism clinic in the State of Alabama. There, he recalled, the MMPI was administered to all patients in order to provide accurate personality descriptions for the guidance of the social workers who carried out treatment. As the clinical program expanded, the tasks of scoring the test, analyzing the test results and of writing reports became excessive for one psychologist; as no others were available to help, Dr. Fowler began to consider programming the steps.

The scoring of the MMPI, a simple process of counting responses, was programmed without difficulty. The computer, although fast," commented Dr. Fowler, "is really not very smart and the rules must be expressed in extremely simple terms."

The third process, report writing, required the storage of hundreds of sentences and paragraphs in the computer's very large memory. "The end result," said the Alabama psychologist, "was that the computer knew, in essence, everything I knew about interpreting the test. It would also, with any given combination of scores," he declared, "make the same statement that I would have made."

The computer was not allowed to become an independent clinician until Dr. Fowler had used it extensively, testing

it for error. As inaccurate interpretations were discovered, the computer was taught more until the reports became fully trustworthy. Dr. Fowler noted that the machine performs exactly as instructed, unable, of course, to interpret creatively.

A computer report, limning the personality of an engineer seeking help from a state alcoholism clinic, was discussed by Dr. Fowler. The diagnostic impression at admission was, "Extremely self-centered and immature; passive-aggressive personality pattern with strong sociopathic overtones."

The computer noted, among other features, that "this patient appears to be a person who has difficulty in maintaining control over his impulses. When he does act out in a socially unacceptable manner he feels guilty and distressed

for a time, although the distress may reflect situational difficulties rather than internal conflicts. He may exhibit a cyclic pattern of acting out, followed by guilt, followed by further acting out. Frequently, his behavior shows a self-defeating and self-punitive tendency. He is pessimistic about the future and distressed about his failure to achieve his goals. His intentions to improve seem genuine, but the pattern is a persistent one, and the long range prognosis is poor. Assisting him to a better adjustment will probably require a combination of firm limits, warm support and environmental manipulation."

The machine also analyzed the subject's response to stress; noted the possibility of a schizoid tendency, pointing out that the data were inadequate for a more positive statement; observed the presence of rigidity accompanied by fears, compulsive behavior and obsessions; and commented on a "somewhat feminine" interest pattern and the avoidance of competitive activities.

ALCOHOL AND DISEASE

(Continued from page 1)

hypertension, the quantities of alcohol consumed by the suspected cases may be as great as that of the known cases.

Cirrhosis of the liver was much more common among drinkers. It was diagnosed in 29 of the cases, but in only one control. The true prevalence is even greater, the researchers opined, because there may be many subjects with the disease at a latent stage who have not yet presented clinical symptoms.

Stomach ulcers were twice as common among drinkers, so were duodenal ulcers. Except for the arrested cases, prevalence of gout was notably higher among the drinkers, and it was con-

cluded that "the magnitude of the difference between the cases and controls was large enough to suggest an association between alcoholism and gout."

The researchers concluded that problem drinkers may have a slightly higher risk of developing some forms of heart disease. They emphatically asserted that their data did not lend support to the idea that "alcohol protects against coronary heart disease."

Although alcoholics may show a higher prevalence of certain diseases than do non-alcoholics, Drs. Pell and D'Alonzo declared, it does not necessarily follow that alcohol plays a direct role in their pathogenesis.

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