

Council on Mental Health and

Committee on Alcoholism and Drug Dependence

Dependence on LSD and Other Hallucinogenic Drugs

In June 1966, the House of Delegates of the American Medical Association took cognizance of the serious consequences of indiscriminate use of hallucinogens.

A resolution urging strict control and supervision of their production and administration included a warning that

these drugs can produce uncontrollable violence, overwhelming panic . . . or attempted suicide or homicide, and can result, among the unstable or those with pre-existing neurosis or psychosis, in severe illness demanding protracted stays in mental hospitals.⁵

There is no accurate measure of the number of persons who take hallucinogens. It is apparent, however, that in recent years their ranks have increased, especially among college students. Widespread publicity has been given to allegedly beneficial effects of lysergic acid diethylamide (LSD), and LSD cliques have sprung up throughout the country. Because of continued illicit manufacture and distribution of LSD in particular, physicians in urban communities and university towns can expect to encounter patients who have taken these drugs.

History

Although LSD was synthesized in 1938 by Stoll and Hofmann, it was not until five years later, when Hofmann accidentally ingested an infinitesimal amount, that its hallucinogenic properties were discovered.

Subsequently, LSD was used by several investigators to induce a "model psychosis" thought to resemble schizophrenia. It was soon recognized, however, that the vivid hallucinations, spectacular illusions, and sensory distortions induced were not characteristic of that disorder, even though the resulting depersonalization was somewhat similar.

By the early 1960's an increasing number of persons were abusing (self-administering) the drug, perhaps abetted by the publications of Aldous Huxley and of Timothy Leary and his associates laud-

ing its "consciousness expanding" qualities.

By 1965, the medical literature contained numerous reports of the adverse, and often catastrophic, untoward effects of the drug, particularly among those with preexisting severe psychopathological conditions. Twenty-seven patients with severe complications of self-administration of LSD were admitted to New York's Bellevue Hospital in a four-month period in 1965.⁶ Substantial numbers have since been admitted to that and other hospitals.

Today LSD is recommended only for strictly controlled research, and its legitimate production and distribution are limited to research purposes by the Food and Drug Administration.

The AMA House of Delegates in 1966 resolved

that no hallucinogen (LSD, mescaline, bufotenine, psilocybin, or dimethyltryptamine) shall be administered except by a physician trained in its use, and this shall apply even if the current studies show LSD to be of value in the treatment of psychoneuroses, sexual perversions, frigidity, alcoholism, or other illnesses.

The American Medical Association stands unalterably opposed to any expansion of the use of psychedelic drugs beyond use by physicians. Even use by trained physicians should continue to be limited to carefully controlled experiments until incontrovertible data are available documenting LSD's efficacy and safety.⁵

Some of the other hallucinogens have been available for longer periods. Peyote has been used for the past 150 years by Indians in Southwestern United States and Mexico in connection with religious rituals and ceremonies of the Native American Church. Such use rarely if ever leads to dependence among these people. This dried top of cactus, however, is generally available on the illicit market in urban centers with relatively high drug-abuse rates. Mescaline, a product refined from cactus, is moderately available. Psilocybin and dimethyltryptamine (DMT) are relative newcomers to the illicit trade. The former is obtained with difficulty, but the latter is fairly available, and readily so in some areas.

The hallucinogens usually are taken orally, but users have experimented with practically every conceivable route of introduction, including sniffing, and subcutaneous and intravenous administration. The capsule and the sugar cube are the common

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carriers for LSD, although animal crackers have been used in at least one area, posing a hazard for unsuspecting children. The physical appearance of the more commonly abused hallucinogens was described in *THE JOURNAL* by Ludwig and Levine.⁷

Pharmacology and Biochemistry

Hallucinogenic drugs include LSD, a semisynthetic derivative of ergonovine; the seeds of some morning glory varieties ("*Oloiuqui*," *Rivea corymbosa*; *Ipomoea violaceus*), the active principle of which is closely related to LSD; mescaline, a phenethylamine present in the buttons of a small cactus (mescal, peyote, *Lophophora williamsii*); psilocybin, an indole found in a mushroom ("*teonanacatl*," *Psilocybe mexicana*); and DMT, a synthetic indole, also found in seeds of a South American plant (*Piptadenia peregrina*). These are highly potent, with LSD being one of the most potent drugs now available. Tolerance to hallucinogens develops rapidly, but usually is lost in two or three days. Some users have built up their LSD doses to 1,000 μ g or 2,000 μ g over a period of days. The average dose is 200 μ g to 400 μ g.

Further, there is cross-tolerance among LSD, psilocybin, and mescaline, although tolerance to mescaline develops more slowly than to the other two. Paradoxically, some users report a state of increased sensitivity to LSD once they have lost their tolerance. Relapse simulating the drugged state has been reported without the ingestion of additional LSD.⁸

LSD in crude form is relatively simple to synthesize, given a supply of lysergic acid or one of the ergot alkaloids. Lysergic acid, in turn, can be produced by deep fermentation processes with only moderate difficulty, provided there is suitable equipment and knowledge. The synthesis of lysergic acid, however, is accomplished only with great difficulty. Since lysergic acid has been brought under federal control, DMT, a relatively new synthetic with a somewhat shorter and more "harsh" action than LSD, has appeared on the illicit market. An LSD "trip" or "experience" usually lasts about 12 hours and the onset is said to be fairly "gentle," whereas a DMT trip lasts about two hours and has a sudden or "rough" onset.

Dependence: Patterns of Abuse

Hallucinogen-induced dependence is psychological, not physical. The drugs have a particular attraction for adolescents and young adults who are socially maladjusted or emotionally inhibited and who constantly seek new "experiences" and "insights."

Because there is no evident physical dependence and because tolerance develops and disappears rapidly, periodic rather than continuous use is the usual pattern.

Three general classes of users have been described.⁷

One consists of narcotic drug-dependent persons

who took LSD or other hallucinogens on infrequent occasions after a "fix" with narcotics.

Another group includes users of other drugs, especially marihuana, who relished the more intense effects of hallucinogens in their quest for

agents to raise them from their apathy, to make life more meaningful, to overcome social inhibitions, and to facilitate meaningful conversations and interpersonal relationships.

A third group is composed of persons who repeatedly took LSD only or in combination with one or more of the other hallucinogens over a sustained period of two weeks to a month. Unlike those in the second group, they took the drugs not for social purposes but to achieve "some personal, esoteric goal."

As with marihuana, no one knows how many experimenters try hallucinogens once or twice and then give them up. For some, the "experience" not only fails to "fulfill" but is unpleasant and often frightening. Whether the trip is "good" or "bad" depends on a combination of factors, including the user's motives and attitudes, the nature of his companionship at the time of the trip, the physical surroundings, and possibly the purity of the drug itself.

Complications

A variety of complications have been reported in the medical literature, but three appear to be most prevalent.

1. Reappearance of the hallucinated, disorganized state without further ingestion of an hallucinogen is one type of complication. This has occurred in subjects within two months after a series of relatively few exposures. It also has occurred more than 12 months after a series of more than 200 exposures that had extended over a period of years.

2. Panic is a frequent complication. Hospitalization may be sought by the user or his companion, neither of whom can cope with the sense of terror.

3. A third relatively common complication is the development of an extended period of psychosis, sometimes after a single exposure, and usually involving a person who was prepsychotic or had a history of current or previous psychosis. There is no available evidence to suggest that the massive, disorganizing experience resulting from the taking of hallucinogens has been therapeutic for any psychotic patient. Quite the contrary!

One study describes three patients hospitalized for extended psychoses after single ingestions of LSD.⁹ All previously were schizophrenics who attempted to gain "new understanding of themselves" through the drug.

As the effects of the drug wore off, (they) were faced with the problems of returning to the real world and accommodating a vague new self image, achieved under the influence of the drug, to reality. Conflict arose as they began to interact with other people and had to become reconciled to the fact that their new understanding was

not readily grasped or responded to by others. Rather than give up their newfound fictional sense of self, the psychotic patients strove to maintain their sense of uniqueness and withdrew from the world.

Other types of complications arise when the user becomes delusional to the degree that he believes he has unusual powers or personal invulnerability. Several suicides while under the influence of hallucinogens have been reported. Some users have been killed while crossing busy streets in the mistaken belief that they could not be hit or injured. Others have met their death in attempts to fly from a roof or window. For protection and other reasons (for example, to help control panic, should it occur) the trip taker usually enlists the aid of a "guide," an experienced user who stays with the "tripper" but takes no LSD himself at the time.

There is evidence that some chronic users, irrespective of other effects or factors, have become less productive. Limited observations suggest the need to explore the possible impairment of abstract thinking and the ability to reason. It has not been demonstrated conclusively that permanent organic or other defects result from prolonged abuse. Recent studies show that chromosomal damage can result.

Recognition of LSD Intoxication

Because LSD was once used to produce a "model psychosis" in the study of schizophrenia, it is not unusual for an LSD-intoxicated person to be mistaken for a patient suffering from an acute schizophrenic episode. LSD may be in the picture if one has a patient with "schizophrenia" or an acute panic reaction with sudden onset and essentially complete recovery in 12 to 72 hours, although overdosage of amphetamines produces somewhat similar reactions.

Laboratory tests are not practical in diagnosis. A procedure has been developed for measuring LSD in blood plasma following intravenous injection,⁹ but in the case of oral administration, blood samples would have to be taken within two or three hours after ingestion to obtain measurable amounts. In either case, the procedure is not suitable for routine clinical application.

Drugs of the LSD type induce a state of excitation of the central nervous system and central autonomic hyperactivity manifested by changes in mood (usually euphoric, sometimes depressive), anxiety, distortion in sensory perception (chiefly visual), visual hallucinations, delusions, depersonalization, dilation of the pupils, and increases in body temperature and blood pressure.⁸

The usual dose of LSD taken by a nontolerant person is 200 μ g to 400 μ g, at which level there is often rather complete disorganization. Some physical effects are experienced, however, when doses of as little as 30 μ g are taken.

The other hallucinogens cause slightly varied, and often less intense, reactions that differ more in degree than in kind. Mescaline produces peripheral autonomic effects, such as nausea, which tend to limit its use.

As with marihuana use and most other forms of drug abuse, the diagnosis of hallucinogen intoxication or dependence is facilitated by a careful history from the patient and his associates. It is important to couple the history with a mental status examination and a personality inventory to determine whether there are features which might make hallucinogens attractive to the patient.

A prompt response to a therapeutic trial with phenothiazines or barbiturates in an acutely intoxicated patient may also assist in the diagnosis.

Treatment

In the acutely intoxicated state, the patient should have an immediate trial with phenothiazine medication, preferably administered intramuscularly. The phenothiazines tend to block the action of LSD. Dosage will, of course, vary with the severity of the intoxication. Barbiturates also may be found useful in lieu of, or in addition to, phenothiazines. Caution relative to the additive effects of these drugs must be observed if they are used in combination. Once the period of intoxication is over, and if symptoms of mental illness are apparent, any medication prescribed should be on the same basis as for a similar type of mentally ill person who has not been involved with hallucinogens.

Drug dependence is a multifaceted problem, embracing almost every aspect of our culture and socioeconomic system. There is no simple solution for such a complex problem. The treatment and rehabilitation of the hallucinogen-dependent person also will require the attention of persons with special skills beyond those of the physician. There may be complicating legal, educational, social, moral, or religious issues which will require the services of other professionals.

Because the hallucinogens do not cause physical dependence, there are no physical complications of withdrawal. The physician, however, must determine at the onset of treatment whether other drugs are being taken simultaneously which require careful withdrawal management. Often this is so.

It may, on occasion, be necessary to hospitalize, at least briefly, a psychologically dependent person who is not acutely intoxicated or psychotic, to separate him from his source of supply. Complete cessation of the use of the drug is necessary. Circumstances may require the family or others to seek legal means by which the patient can be brought to treatment. There is wide variation among the states in regard to the civil commitment of the mentally ill, and it may be prudent to seek advice from attorneys as well as representatives of the medical profession on such questions.

The major focus of effective treatment cannot be on the drug intake alone, because dependence in its various forms is almost universally symptomatic of underlying personality problems, severe neurotic conflicts, or psychotic reactions interacting with environmental factors. The task of the treating physician is to learn from the patient *what*

really bothers him at both conscious and unconscious levels and what needs are being spuriously met at both these levels by taking drugs.

Then it becomes the physician's task to help the patient come to a full comprehension of his intrapsychic and interpersonal problems and how to cope with them. Short of this, the physician may have to give long-term supportive therapy that will enable the patient to live as productive and satisfying a life as possible with his psychic handicap and in a drug-free state.

The physician, of course, cannot change real vocational, family, social, and other environmental problems contributing to the patient's difficulty merely by treating his intrapsychic disorder. For this, as noted earlier, collaboration with others possessing additional pertinent skills is essential.

If the physician does not have sufficient professional training to equip him to handle these difficulties, early psychiatric referral may be indicated. When psychiatric resources are not available, the physician may be called upon to provide limited individual, group, or family therapy over an extended period of time. In such cases, it is particularly important to seek additional help in the community from the appropriate agencies, interested lay organizations, or concerned professionals who can add substance to the treatment program.

The physician should remember that the drug-dependent person (psychological, physical, or both) is sick and deserves understanding and treatment, even though he may have been involved in unlawful activity. While the hallucinogen user may resort to such activity to obtain his drug or become involved in unlawful behavior through his associations with others or as a consequence of taking drugs, the abuse of drugs is not necessarily equated with criminality, although several states make possession and use of hallucinogens a crime.

A concomitant consideration is that through the use of the drug a behavioral pattern may have been established in which the patient has experienced rejection by society and acceptance perhaps only by those with similar problems. He therefore may have alienated himself from more desirable associates and family, or perhaps may never have achieved a period of reasonably satisfactory adjustment to which he can return. Rehabilitation in all probability will require concerted community support, with simultaneous efforts to provide housing, employment, spiritual assistance, and other aids. Each patient presents a unique therapeutic problem calling for ingenuity on the part of all who endeavor to help.

Legal Control

The control of illicit distribution of drugs is an important aspect of prevention of drug dependence. Federal enforcement rests with the FDA under the Drug Abuse Control Amendments of 1965. Possession of hallucinogens outside of legitimate channels with intent to sell is illegal and, under any

circumstances, unless the drug has been obtained legally, it is subject to seizure. An exemption is made for the use of peyote in bona fide religious ceremonies of the Native American Church.

State laws in the area of control are less uniform than those in relation to opiates and marihuana and in some instances are nonexistent. A few states cover peyote under their narcotic laws. Because hallucinogens are rarely administered by physicians, and then only in a carefully-controlled setting, their possession by a person for his own use would almost always be associated with abuse.

The Physician-Citizen's Role

Only an aroused and concerned public can create, mobilize, and implement resources to deal adequately with as serious a problem as drug dependence in all its forms. Education, which can provide the proper stimulus to accomplish this, must come from community leaders aware of the needs and from professionals who apply themselves to these needs.

Frank and forceful public discussion, focusing on the futility and inherent dangers in experimentation with drugs such as the hallucinogens and on the consequences of dependence, may deter the uninitiated from starting. Expanded counseling services in schools could provide more effective and more suitable alternatives to young people in dealing with their problems.

Persistent vigilance by law enforcement agencies in eliminating illegal sources of the drug needs public support and sufficient funds to do the job. Real crusading may be required before sufficient public and private funds are devoted to creating and operating adequate treatment facilities and programs for the afflicted and for the control of illicit drug use. And finally, only community understanding, compassion, interest, and active aid will enable the rehabilitated drug-dependent person to find a satisfactory place in society.

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