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Complications Associated with Lysergic Acid Diethylamide (LSD-25)

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TWO DECADES AGO Hofmann [1] accidentally discovered the hallucinogenic activity of *d*-lysergic acid diethylamide (LSD-25). Its ability to induce a "model psychosis" makes it an excellent laboratory device for the study of psychotic-like phenomena. LSD-25 has also been employed as an adjunct to psychotherapy because recall of repressed memories is enhanced and ego defensiveness to conflict laden material is reduced. Interest in this indole increased when it was found to be a serotonin antagonist that altered cerebral synaptic transmission. Almost 1,000 articles have reported on every aspect of its chemical, biological, and psychological activity.

A substance capable of evoking such profound psychic symptoms as delusions, hallucinations, depersonalization, and euphoria or depression could be expected to have serious side effects. For this reason a survey of investigations using LSD-25 was carried out in 1960.[2] The results of this inquiry and of a literature search revealed very few toxic or psychologic complications. In normal experimental subjects no confirmed instance of attempted or completed suicide following LSD-25 ingestion was found. The incidence of psychotic reactions extending beyond 48 hours was 0.08% for this group. In patients undergoing LSD-25 type psychotherapy, the completed suicide rate was 0.04% and psychotic reactions persisting longer than 2 days was 0.18%. No instance of addiction to LSD-25 was discovered.

Classification of Reactions

Recently, we have encountered an increasing number of untoward events in connection with LSD-25 administration. These can be classified under 4 types of complications.

1. Prolonged Psychotic Reactions.—Five individuals in prolonged psychotic breaks have been seen by us. In each instance an underlying hysterical or paranoid personality pattern was evident. The dissociation state itself was more reminiscent of LSD-25 phenomena than of a schizophrenic reaction. Hallucinations were visual rather than auditory; synesthesias and emotional instability were common. In retrospect, it appears that unskillful therapeutic management permitted the upsurge of massive unconscious conflictual material which could not be handled by the patient's fragmented defenses. In some instances nonmedical practitioners had administered the drug without supervision. One patient had been given the drug over 300 times.

2. Acting Out Behavior.—Another undesirable effect was the florid acting out of sociopathic character disorders after taking LSD-25. They appeared to use the drug experience as an excuse or a justification for their subsequent psychopathic behavior. For example, 2 months after an LSD-25 treatment a patient was arrested and convicted of grand larceny. His defense was that the drug had changed his personality to the extent that he had no control over his actions. The court did not accept his claim.

3. Abuse of Euphoriant Property.—An alarming development is the recent appearance of LSD-25 as an item of underworld traffic. There is illicit trade in the 25 mcg. tablets, 100 mcg. ampules, and in sugar cubes saturated with 100 mcg. of the agent. Some of the borderline people who take marihuana also have "LSD parties" or take the drug alone. Occasional catastrophic reactions can be anticipated from such casual, unattended use. Accidental ingestion of the drug by individuals who are unaware of its nature has already occurred. This represents a maximally stressful event because the perceptual and ideational distortions then occur without the saving knowledge that they were drug induced and temporary. Self-destruction or psychotic decompensation is not unlikely following such a devastating experience. A child has been seen who inadvertently ingested a sugar cube containing LSD-25. One month later he was still in a partial dissociation state.

4. Multihabituation.—True physiological addiction to LSD-25 has not yet been observed. However, an entity, new but not rare, is appearing which might be called multihabituation. This consists of the frequent indulgence in a variety of stimulants, narcotics, sedatives, and hallucinogens. One patient related that she and her "beat" friends regularly take either peyote, marihuana, barbiturates, amphetamine, LSD-25, heroin, methylpheni-

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date, or meperidine. She claims that withdrawal symptoms for any single drug do not occur. Multihabituation seems to be a way of life for these antisocial individuals.

The manufacturers of LSD-25 have exercised admirable restraint in not attempting to introduce the drug commercially until its psychologic and physiologic side effects are more precisely known. They carefully scrutinize applications for its use by investigators. It is distributed only for investigational use at this time.

Now that it has become available from sources concerned solely with the profits from illicit sales, physicians may encounter patients in a state of LSD-25 intoxication. A clinical laboratory test to detect this agent is not available. The diagnosis can generally be made from the history and interview, despite the bizarre and variable nature of the subjective effects. In the acute phase the pupils are widely dilated. Other symptoms of sympathetic stimulation may be present, for example, tremor, hyperreflexia, hypertension, and an elevated temperature. The visual distortions are characteristic: intensification of colors, mobile, multicolored hallucinations or pseudohallucinations, or the illusory undulation of fixed objects. With closed eyes flowing colored geometrical designs are seen. Synesthesias, hyperacusis, alterations of body image, aberrations of time sense, derealization, delusions, and affectual changes ranging from elation to panic may last for 4-8 hours when dosages exceed 1 mcg. per kilogram. Doses of 20 mcg. per kilogram are known to have been given without a lethal outcome, but the psychic disturbance becomes profound. Complete loss of reality contact, total withdrawal, and dissolution of the ego boundaries are described.

Summary

The use of LSD-25 can be attended with serious complications. This is especially true now that a blackmarket in the drug exists. The dangers of suicide, prolonged psychotic reactions, and antisocial acting out behavior exist. Misuse of the drug alone or in combination with other agents has been encountered. Properly used, LSD-25 remains an important investigational instrument which might assist in the elucidation of significant problems in the study of the mind.

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