

A NOTE ON SOME THERAPEUTIC IMPLICATIONS OF THE MESCALINE-INDUCED STATE

BY HERMAN C. B. DENBER, M. D., AND SIDNEY MERLIS, M. D.

While investigating the action of chlorpromazine hydrochloride in the mescaline-induced state, the writers of this paper were alerted to certain therapeutic possibilities. A previous study¹ had shown that following the intravenous injection of 0.5 grams of mescaline sulfate, four patients had remissions of symptoms, and one was subsequently discharged from the hospital. A one-year follow-up showed this latter patient's adjustment still to be satisfactory. Most of the previous studies on mescaline have emphasized the descriptive aspects of the problem²⁻⁵ with occasional attempts to underscore the psychodynamics.^{6, 7}

The tremendous inner psychic upheaval produced by mescaline and its potential therapeutic value have not received sufficient attention.⁸ Guttman⁵ suggested that mescaline might be used as a "forced or concentrated analysis." Hoch, Cattell and Pennes² declared that the value of mescaline and lysergic acid in therapeutic work must be ascertained in a large number of patients, but gave no further details. Recently, Sandison, Spencer and Whitelaw⁹ have reported on the therapeutic value of lysergic acid diethylamide in the treatment of 36 psychoneurotic patients. Of the 23 patients who "completed treatment," 14 were considered recovered, one greatly improved, six moderately improved, and two not improved. These investigators felt that the drug had the property of "disturbing the unconscious so that repressed memories are relived with remarkable clarity and a change to an infantile body image."

Before becoming aware of this work, the writers had begun to investigate the action of chlorpromazine hydrochloride on the various aspects of the mescaline-induced state. Sodium amytal¹⁰ and sodium succinate¹¹ have been reported as being antagonists of mescaline. The writers were interested in knowing whether chlorpromazine hydrochloride could abort the intensive symptoms due to mescaline and whether there were concomitant electro-encephalographic changes. The psychodynamic structure and its relation to the life patterns of the individual were also studied during the mescaline-induced state.

METHOD

Five male and five female patients were studied. They were selected at random from very recent hospital admissions. Three had entered voluntarily. They varied in age from 19 to 51 years. The clinical diagnoses were varied:

Dementia præcox, catatonic type	2
Dementia præcox, paranoid type	2
Psychoneurosis, various types	3
Psychosis with psychopathic personality	2
Undiagnosed (Phobic behavior with EEG suggestive of convulsive disorder)	1

The procedure was carried out within a relatively brief time following each patient's admission to the hospital. (See table.)

Table

Name	Age	Diagnosis	Admitted	Treated	Result
J. L.	19	D. P. C.	7/16/54	7/21/54	Remission
B. W.	30	Psychoneuro.	7/7/54	7/15/54	Remission
S. T.	31	Undiag.	6/18/54	7/9/54	Remission
E. W.	31	Psychopath.	6/22/54	7/16/54	Remission for 23 days
A. F.	34	Psychopath.	7/2/54	7/7/54	Remission
J. W.	37	D. P. P.	7/23/54	8/3/54	Unchanged
J. J.	40	D. P. C.	7/16/54	8/2/54	Remission
E. M.	43	D. P. P.	7/30/54	8/6/54	Remission
P. G.	47	Psychoneuro.	7/2/54	7/14/54	Unchanged
J. A.	51	Psychoneuro.	7/2/54	7/13/54	Unchanged

On the day preceding the test, each patient was interviewed, and notes were made of attitudes, emotions, and any abnormal thinking. On the morning of the test, after a light breakfast, the patient was brought to the electro-encephalographic laboratory where a control record was done. Blood was drawn for a glucose determination; and pulse, blood pressure and pupillary diameter were measured.

Then 0.5 grams of mescaline sulfate dissolved in 20 cc. of physiological saline were injected intravenously at the rate of 2 cc. per minute. The electro-encephalogram was recorded simultaneously. The pulse, blood pressure and pupillary diameter were measured every 15 minutes. The patient was asked his thoughts and was asked to associate to them freely. All questions were made as general as possible, as, "What are you thinking about now?" or "How do you feel?" or "What does that suggest to you?" Body movements, gestures and postures were noted in relation to clinical

state. These observations were continued for periods of one to one and one-half hours. At the end of this time, 2 cc. (50 mg.) of chlorpromazine hydrochloride were injected intramuscularly. The studies were continued from 30 to 60 minutes thereafter, when the procedure was terminated. The patients were interviewed at the second and twenty-fourth hours following the chlorpromazine hydrochloride injection. They were then seen on daily rounds and frequently in psychotherapeutic sessions by the residents.

RESULTS

Following the injection of mescaline, many conflicts were verbalized or symbolically expressed by most of the patients. Hostility and aggression toward significant environmental figures were shown. One patient developed an acute rage reaction, making it necessary to put her in restraint during the study. Marked conflict or confusion in the sexual sphere was evidenced verbally or by gesture in seven of 10 patients. These and other reactions to mescaline⁸ helped in formulating the psychopathology of the psychotic breakdown.

Several minutes after the injection of chlorpromazine hydrochloride, the brain waves began to revert to their pre-mescaline patterns. More detailed electro-encephalographic findings will be reported at a later date. Chlorpromazine hydrochloride reversed the mescaline mydriasis, and pupillary diameters returned to pre-mescaline size. The pulse accelerated and the blood pressure fell. Anxiety and tension caused by mescaline diminished or disappeared in eight of 10 patients within an hour after the injection of the chlorpromazine hydrochloride. In one of these eight patients, there was an initial upsurge of restlessness and agitation following this injection, but this disappeared within 10 minutes. Two of the patients did not have symptoms of restlessness and agitation during the mescaline state. For variable periods (12 to 24 hours) following the injection of mescaline and chlorpromazine hydrochloride, some of the patients were very quiet, drowsy, lethargic or sleepy.

Case Notes

E. M., a 43-year-old white woman, was admitted to Manhattan State Hospital on July 30, 1954. Her behavior and thinking had become increasingly bizarre during the preceding two months. On

August 2, 1954 she was found to be hyperactive, overproductive, rambling, incoherent, and irrelevant. She used sound associations, was repetitive, and stereotyped in her speech. Her affect was blunted and inappropriate. She had delusions of persecution, somatic delusions, and bizarre, grandiose and hypochondriacal ideas. She said, "The attendants want to harm me. They are plotting against me." Her sensorium was intact. On August 6, 1954, E. M. received 0.5 grams of mescaline sulfate intravenously. She compared her feelings during this state to an "airplane ride" and asked repeatedly, "What state are we over now?" After one and one-half hours, 50 mg. of chlorpromazine hydrochloride was injected intramuscularly. Within half an hour the patient said, "Please leave me alone. This has been too much. Let me sleep awhile and then I'll talk to you." The following day she was quiet. She described her feelings during the mescaline state as, "It was shocking. It was very frightening." Her responses to questions were now relevant and coherent. The affect was appropriate to the thought content. Paranoid, bizarre, grandiose and hypochondriacal ideas had disappeared. The patient said, "The attendants are very nice to me. They used to think that I was plotting against them."

* * *

Forty-eight hours after the combined injections of mescaline sulfate and chlorpromazine hydrochloride, there was no change in the clinical status of the two psychoneurotic (alcoholic) patients, and the one paranoid schizophrenic. Both alcoholic patients described their feelings during the mescaline state as akin to those during a drinking bout or "getting over a drunk." One patient was symptom-free for 23 days. Six patients showed complete remissions of symptoms (to the date of this writing, August 18, 1954).

* * *

One patient who had a four-year history of incapacitating phobic behavior ("I have a fear of crossing the street alone and walking in the middle of the sidewalk"), who walked about the ward hugging the walls, and who had been treated unsuccessfully by electric convulsive therapy, carbon dioxide inhalations, and psychotherapy, showed a complete remission of symptoms for 48 hours. This was followed by a relapse. This patient's exact diagnosis is still unclear, for the electro-encephalogram showed a symmetrical, diffuse, high

voltage, slow wave burst pattern. After a two-week period during which there was no improvement, only increasing anxiety, he said, "Doctor, I'm losing ground. I'm losing confidence. I want to go to the treatment ward. They say that I need insulin shock." He again received 0.5 grams of mescaline sulfate intravenously and 50 mg. of chlorpromazine hydrochloride intramuscularly. Six hours later all the symptoms had disappeared and the patient stated, "I feel all right. Nothing bothers me. I'm not afraid." This remission persists to date.

* * *

In general, anxiety and tension disappeared following the mescaline-chlorpromazine injections. Agitation gave way to complacency. The depression, where present, lifted and the mood lightened. The stream of thought became relevant and coherent. Flight of ideas disappeared. The emotional reactions showed more tone, depth and variability, and were appropriate to the thought content. The patients' environmental adaptive abilities showed marked improvement.

There was a tendency to move emotionally toward others, replacing a previous detached and "shying away" attitude. Of one patient it was said, "She helps the others, particularly the old ladies. Before, she stayed by herself."

The development of insight and understanding was most remarkable. One patient said, "If anything, at least I talked about it." Another said, "I never felt before like this feeling I have now. Being myself again. It's like giving yourself back to yourself again." One patient, "assaultive, noisy and a management problem" before the injections, became "quiet, co-operative and a changed person" afterward.

SUMMARY

The clinical and laboratory data following the injections of mescaline sulfate and chlorpromazine hydrochloride are briefly reported. The relative importance of each drug, the physiological mechanisms involved, and the psychodynamic factors implicated in the clinical remissions are now being intensively investigated under rigidly controlled conditions.

ACKNOWLEDGMENT

The writers wish to thank Mr. William Kirsch of the Smith, Kline & French Laboratories, Philadelphia, who provided generous quan-

tities of "Thorazine" (Chlorpromazine hydrochloride, S. K. F.) and mescaline. They are indebted to Drs. Etta G. Bird, Murray I. Kofkin, and Lewis Kurke who did the follow-up psychotherapy with the patients.

Manhattan State Hospital (H. C. B. D.)
Ward's Island, N. Y.
and
Central Islip State Hospital (S. M.)
Central Islip, N. Y.

REFERENCES

1. Denber, H. C. B.; Merlis, S.; and Hunter, W.: Studies on mescaline I: its action on the clinical and brain wave patterns of schizophrenic patients before and after electroconvulsive treatment. In preparation.
2. Hoch, P. H.; Cattell, J. P.; and Pennes, H. H.: Effects of mescaline and lysergic acid (d-LSD-25). *Am. J. Psychiat.*, 108:579-584, February 1952.
3. Stockings, G. T.: Clinical study of the mescaline psychosis with special reference to the mechanism of the genesis of schizophrenic and other psychotic states. *J. Ment. Sci.*, 86:29-47, January 1940.
4. Kluver, H.: Mechanisms of hallucinations. In: *Studies in Personality*. McGraw-Hill. New York. 1942.
5. Guttman, E.: Artificial psychosis produced by mescaline. *J. Ment. Sci.*, 82:203-221, April 1936.
6. Hoch, P. H.; Cattell, J. P.; and Pennes, H. H.: Effects of drugs. Theoretical considerations from a psychological viewpoint. *Am. J. Psychiat.*, 108:585-589, February 1952.
7. Cattell, J. P.: The influence of mescaline on psychodynamic material. *J. N. M. D.* In press.
8. Denber, H. C. B.: Psychodynamic observations in the mescaline-induced state: some therapeutic applications. In preparation.
9. Sandison, R. A.; Spencer, A. M.; and Whitelaw, J. D. A.: The therapeutic value of lysergic acid diethylamide in mental illness. *J. Ment. Sci.*, 100:491-507, April 1954.
10. Hoch, P. H.: Experimental induction of psychosis. In: *The Biology of Mental Health and Disease*. Hoeber. New York. 1952.
11. Kluver, H.: Functional differences between occipital and temporal lobes, with special reference to the interrelations of behavior and extracerebral mechanisms. Discussed by Gerard, R. W.: In: *Hixon Symposium*. Wiley. New York. 1951.