L. S. D. 25 As an Aid in Psychotherapy

(Preliminary Report of a New Drug)

ANTHONY K. BUSCH, M.D.
WARREN C. JOHNSON, M.D.
St. Louis, Missouri

In the treatment of psychotic patients in a hospital for chronic states, it is frequently difficult to elicit information, within a reasonable length of time, to develop a useful formulation of the patient's basic conflicts. There are many things that have come to be helpful in getting this information, viz.: interviews during amytal or pentothal narcosis; interviews during insulin shock, or while recovering from electric shock; etc. The many failures with these present methods have kept us constantly looking for a better means.

Occasionally, it was observed that patients were able to verbalize the repressed components of their conflicts during a toxic delirium. This led us to consider various drugs that might induce a transitory delirious state. It was during this search that the Sandoz Company called to our attention and made available d-lysergic acid diethylamide (L.S.D. 25).[1]

This drug is a synthetic amide prepared from natural d-lysergic acid and diethylamide and belongs to the ergonovine (ergometrine) group.[2] It is very active in small oral doses. The solution (L.S.D. 25) contains only 20 gamma per cc. The average effective dose for women was 1.5 cc. or 30 gamma, and for men 2.0 cc., or 40 gamma. Patients became aware of drug activity in from one-half to one and one-half hours. Maximum effectiveness was observed in from two to two and one-half hours and persisted for as long as eight hours, though four hours appeared to be the usual length of action. Phenobarbital tends to neutralize the activity of L.S.D. 25.

It is the preliminary investigation of the action of this drug in twenty-nine patients which we wish to report. The effects are listed under two headings:—systemic and mental.

Systemic Effects:

The systemic effects in the order of their frequency were: gastric distress, nausea, and occasional vomiting; muscle irritability, developing into tremors and sometimes twitching; dizziness, dilation of the pupils, with occasional hallucinatory flashes of light; chilliness; increase in pulse rate; occasionally, headache; and in a few cases, periodic flushing of the skin.

No changes were observed in the blood picture, urine, N.P.N., or blood sugar when studied before and after the several doses each patient received. The blood pressure and temperature exhibited no consistent changes during medication.

Mental Effects:

The mental effects were those of excitation. The patients moved about more, showed greater interest, responded more readily to stimulation, talked more, and exhibited more emotion. With this increase in activity, there was a greater verbal expression of psychopathology. There were occasional short periods of confusion and disorientation, and occasional transitory visual hallucinations. Most of the patients showed some degree of euphoria.

Below, is a more detailed list of the most outstanding behavior symptoms of each of the patients while under the influence of L.S.D. 25:

From St. Louis State Hospital and Washington University Medical School, St. Louis, Missouri.

Patient	*Sex*	*Age*	*Diagnosis*	*Remarks*
1. M.A. Adm. 5/22/49	F.	44	Catatonic Schizophrenia	After medication—more activity, possibly more alert; mumbling and incoherent speech increased.
2. J.B. Adm. 9/21/36	F.	53	Paranoid Schizophrenia	Complained of feeling faint and dizzy and was more active than usual with 1 cc. More activity with 2 cc, and seemed elated; said medicine made her "feel good." Later was fearful and preoccupied.
3. E.B. Adm. 1/3/44	F.	53	Paranoid Schizophrenia	Became more active; talked faster, with increased flight of ideas; was elated, "felt good, as if drunk." Active hallucinations expressed. Spoke to people not present, etc.
4. S.B. Adm. 10/25/19	F.	57	Chronic Mania	With small dose, patient was seen to talk more rapidly and more emotionally than before. All doses over 1 cc. appeared to make patient more disturbed.
5. C.C. Adm. 6/29/48	F.	49	Schizophrenia, Other types, Catatonic and Hebephrenic	She seemed to be more irritable, but entered into more activity on the ward, and was occasionally hostile. Hallucinations about men in a fire truck.
6. M.F. Adm. 12/4/44	F.	41	Hebephrenic Schizophrenia	Patient talks more rapidly, and usually more coherently. More interest in ward activity—entering into games and O.T.
7. M.H. Adm. 10/15/45	F.	24	Schizophrenia Simple, dull normal intelligence	Patient usually mute and withdrawn. After medication, writes letters, and occasionally sings to herself. More alert.
8. A.H. Adm. 6/10/45	F.	46	Schizophrenia	Talks more rapidly, but frequently so fast it is not understandable. With a 3 cc. dose, was so uneasy that she was unable to play games in O.T. Had tremor of hand, unable to write.
9. C.H. Adm. 9/7/43	F.	37	Schizophrenia, Paranoid	Attempts were made to work puzzles and to write. Hallucinations increased, but coherent statements occasionally.
10. L.H. Adm. 12/20/30	F.	47	Schizophrenia, Paranoid	More talkative, more profane, expresses hallucinations following medication. More active, requires occasional wet sheet pack.
11. F.H. Adm. 11/19/45	F.	47	Schizophrenia Paranoid	Speech is increased, but becomes incoherent frequently. With lower doses, entered into ward activity and did drawing. Became quite disturbed when 3 cc. of L.S.D. 25 were given.
12. L.J. Adm. 11/24/41	F.	46	Paranoid State	Became sarcastic and active with medication.
13. M.M. Adm. 9/20/32	F.	72	Schizophrenia Paranoid	Increase in combative behavior. More active and profane. Speech was usually incoherent.
14. M.M. Adm. 10/10/46	F.	46	Schizophrenia Hebephrenic	More spontaneous and talkative; nausea on occasion.
15. C.P.	F.	38	Schizophrenia	Patient was noticeably more responsive. Speech often incoherent. Answers some questions coherently. More irritable.
16. E.J.	F.	40	Schizophrenia	No marked change in behavior. Speech coherent and increased, on occasion.
17. A.R. Adm. 11/5/45	F.	48	Manic-Depressive Manic Phase, Post-Lobotomy	Complained of nausea and headache. More noisy and combative if medication is given when disturbed.
18. H.W. Adm. 8/16/43	F.	49	Manic-Depressive	More talkative, and more irritable. More resistive, suspicious, active.
19. M.S. Adm. 5/19/47	F.	41	Schizophrenia, Catatonic and Paranoid Features	She became more talkative, more responsive and better able to express herself. Patient was more conscious of her difficulties and wanted to do something about it. Became over-active on several occasions, with larger doses.
20. S.P. Adm. 8/31/42	F.	42	Schizophrenia Paranoid	Patient became more expressive. Responded better to environment. She was more active and better able to discuss her problems.
21. D.L.	F.	32	Schizophrenia Catatonic and Paranoid Features	Following medication, patient was able to express her feelings; better able to act out her hostility in an acceptable manner. She could discuss her problems.

These twenty-one psychotic patients showed increases in activity. The manics, 4, 17, and 18, to such an extent that hydrotherapy was necessary for control. Four of the paranoid schizophrenics, 10, 11, 13, and 19, also required hydrotherapy. Despite this, we were impressed by the various attempts most of the patients made to establish some kind of interpersonal relationship with the personnel. This was especially prominent in patients 19, 20 and 21. In view of this, it was decided that the drug might be of value during psychotherapy. Eight patients undergoing psychotherapy were then chosen for a trial. Four were in-patients and four out-patients:

Patient	*Sex*	*Age*	*Diagnosis*	*Remarks*
22. V.P. Adm. 12/7/48	F.	37	Psychoneurosis, Mixed Type	Two Interviews with L.S.D. 25 showed a change in afffect from usual flat to appropriate and even excessive (crying). She was able to recall her childhood vividly. She discussed her immediate problems. Response was much better than previous 36 interviews, two with the aid of amytal.
23. E.J. Adm. 2/21/49	F.	23	Schizophrenia Catatonic	Showed more feeling; talked more freely and easily; more insight into family situation; marked emotional tone. Dizzy immediately after administration.
24. V.Z. Adm. 12/7/48	F.	25	Schizophrenia Catatonic	Better able to talk about her early life. Showed some regressive behavior and seemed to re-live childhood experiences.
25. J.M. Adm. 6/7/49	F.	23	Schizophrenia Catatonic	Response to L.S.D. 25 was increased activity and interest in surroundings, as well as ability to discuss her problems, which was as good as, and probably better than, discussion under sodium amytal.
26. Z.T. (Out-Pt.)	F.	26	Psychoneurosis	Relived traumatic episodes of childhood.
27. E.H. (Out-Pt.)	F.	48	Psychoneurosis, Hysteria	Relived traumatic episodes of childhood. Previous amytal interviews had failed. This patient had 120 hours of therapy.
28. H.H.	M.	28	Psychosomatic	Relived disturbing Navy experience. Previous attempts at narcosynthesis were only partially successful.
29. W.F. (Out-Pt.)	M.	39	Psychoneurosis, Neurasthenia	Became more disturbed, but better able to discuss problems.

With L.S.D. 25, these eight patients had experiences which profoundly influenced the course of their progress. The effect was in the nature of a transitory toxic state, which disturbed the barrier of repression and permitted a re-examination of significant experiences of the past, which sometimes were relived with frightening realism. With this, some of the patients were then able to re-evaluate the emotional meaning of some of their symptoms, and improved. Most were better able to organize their ideas in relation to real rather than fancied problems and were seen to experience and express relevant emotion.

Two of the patients, 22 and 28, were improved sufficiently to discontinue treatment at the time of this writing.

Summary:

We believe that L.S.D. 25 is a drug which induces a controllable toxic state within the nervous system, that re-activates anxiety and fear with apparently just enough euphoria to permit recall of the provoking experiences. It does this without the sluggishness of speech difficulties so frequently encountered with amytal or the more marked confusion encountered during I.S.T. and following E.C.T.

On the basis of this preliminary investigation, L.S.D. 25 may offer a means for more readily gaining access to the chronically withdrawn patients. It may also serve as a new tool for shortening psychotherapy. We hope further investigation justifies our present impression.

Author's Note: Supplies of L.S.D. 25 for this study were made available by the manufacturer, Sandoz Pharmaceuticals, New York City.

REFERENCES

1. Helv. Chim. Acta 26, 944 (1943).
2. Schweiz. Arch. f. Neurol. u. Psych. (1947).