A PRELIMINARY REPORT ON THE USE OF SERNYL IN PSYCHIATRIC ILLNESS

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MANY chemical substances have been used to assist psychotherapeutic treatment. Abreactive procedures, using either depressant substances like sodium amytal, or excitatory substances like methedrine, or sometimes a combination of these substances, are standard procedures though, in everyday psychiatric practice, their use is limited.

In addition to these procedures, others have more recently been used. Busch and Johnson (1950) reported the use of LSD in eight patients with a psychoneurotic illness and Sandison *et al.* (1954) investigated the therapeutic value of this substance, emphasizing its value in obsessional disorders.

The search for an effective intravenous anaesthetic agent led to the synthesis of a series of cyclo-hexylamine derivatives. The first of these to be investigated clinically was 1-aryl-cyclohexylamine (Sernyl) It was found, however, that psychological disturbances limited the use of this compound in anaesthetic practice, but the investigation of these by psychiatrists has led to a number of interesting reports which have been reviewed elsewhere (Davies and Beach, 1960). Abreactions were reported by the anaesthetists (Greifenstein *et al.*, 1958) while its schizophrenomimetic properties were described by Luby *et al.* (1959). These publications suggested that Sernyl might be useful as an abreactive agent or, perhaps, like LSD, of value in more chronic conditions.

The aim of this paper is to report 60 interviews after I.V. Sernyl in five patients, and to suggest from this, possible uses for this drug.

MATERIAL

The five patients who received this treatment were in-patients at The Bethlem Royal Hospital under the care of Dr. Linford Rees. Some clinical information about them is shown in Table I, and a brief case history of each patient is given below:

TABLE I

Case No.	Sex	Age		Length of Illness	Number of Interviews with Sernyl
1	F	31	Personality disorder. Mixed neurotic picture	3 years	12
2	F	34	Affective disorder	6 years	9
3	F	33	Obsessional disorder	12 years	16
4	F	21	Anorexia nervosa. Obsessional personality ..	9 months	15
5	M	40	Obsessional disorder	10 years	8

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METHOD

After a full psychiatric history had been obtained, patients were seen for three-hourly psychotherapeutic sessions each week. When treatment with Sernyl was decided upon, the patient was first given sodium amytal I.V. on two or three occasions, in order that she should become used to drug-assisted psychotherapy. Sernyl was then given twice a week by I.V. injections. The treatment was given in the patient's room, with the patient lying down. One mg. was given at first, and the dose was increased by 0·5 mg. on each succeeding occasion to a maximum of 5·0 mg. Optimum dosage seemed to be 3·5–4·5 mg. given over 3–5 minutes. In one patient (Case No. 2) Sernyl followed a number of methedrine injections and patient No. 5 had previously received 14 treatments with LSD. During the session the doctor played a passive role, recording all that was said or done, but neither suggesting topics of conversation nor encouraging those started by the patient. Afterwards, the patients were closely observed by the nursing staff. In the evening of the treatment day, the patients were asked to write down their experiences under the drug and, later in the week, these reports were discussed with the patients in a normal psychotherapeutic setting.

OBSERVATIONS

While a particular feature—e.g. restlessness or changes in bodily sensations or an abreaction—may be the main feature of a particular Sernyl experience, the following gives a general picture of the course of events:

The drug acts immediately and while the injection is being given, the patient often says that he is "beginning to go under" and may compare the sensation to being anaesthetized or of being drunk or of falling asleep. Often background noises are commented on by the patient as appearing to get louder. There is a feeling of incipient vertigo that is often made more severe by sudden movements, and the patient generally finds it more comfortable to lie still. Generally at this stage nystagmus is easily observed.

Feelings of numbness are complained of, particularly about the face and hands—"My hands feel different", "My lips are numb", "It's like having a tooth out under a local anaesthetic" are frequent remarks. At this time pin pricks are not felt as sharp. In addition, more pronounced feelings of bodily change sometimes occur to a marked degree. Sometimes it is that the hands seem huge or tiny, sometimes the legs seem a long way away and occasionally there are complaints that the whole body feels large at one moment and tiny at another—"I'm like Alice in Wonderland" one patient reported.

The patient's mood is not constant, but is generally one of euphoria. Marked emotional abreactions, however, occurred in each patient on one or two occasions, as significant episodes were remembered. On these occasions restlessness was marked but this did not cause concern. Emotional feelings towards the therapist are frequently expressed in unambiguous terms. The patient talks readily throughout the experience but repetition of words, phrases and sentences are particularly common.

No hallucinations occur at this dosage, but hypnagogic-like experiences are not uncommon.

The patient never loses touch with his surroundings and is always correctly orientated and responds correctly to stimuli, yet it is a marked feature of the experience that it is not remembered clearly afterwards. All patients underestimated the time of the experience, generally saying that it lasted 10–20

minutes when, in fact, it was two to three times this. After 30–45 minutes the patient will often say, "I am back to normal now", then, after a return of symptoms, he will repeat this a few minutes later. Generally the acute symptoms subside after 45–60 minutes, though the patient may remain somewhat dazed and unwilling to move from the bed for another 30 minutes. Vomiting did not occur in these patients. Thereafter, for several hours, there may be a change in behaviour—sometimes described by the patient as being "pleasantly drunk". It was noticeable that the three patients with obsessional symptoms lost some of these during these few hours. Occasionally thereafter the patient felt a little unwell for the rest of the day.

After 3 mg. of Sernyl one patient said, "Everything is getting bigger, bigger, bigger; I'm frightened, frightened, frightened—it's a terrible feeling; I feel like a puppet with someone pulling the strings, strings". Another said. "What on earth is happening to me—I don't know—I am of different sizes, big and small, big and small. Space does not mean a thing, big and small, it's delicious".

Examples are given in the case reports of the patients' reported experiences but the following contains many features that often occurred.

"After a few minutes, I seemed to develop a feeling of being away from the world and entered into a world of spiritual perfection. The view from my bedroom window took on a great significance with a profound impression of peace, distance and detail. Then the fear of blindness welled up inside me, bringing with it awful fear and panic. For years this fear of blindness has haunted me, particularly before dropping off to sleep—but not during the day. Then, quite suddenly, I returned to near reality with the view reverting to an ordinary pleasant one without detail or the feeling of 'spiritual'. I noticed that I seemed detached from my body—my feet and lower part of the legs felt like blocks of concrete fixed to the ground. Life re-entered the body from the head downwards, finally connecting up at the solid part of my legs. For the rest of the session I had the feeling of alcohol wearing off. Throughout the evening I felt calmer than usual though I had a slight headache."

Outcome of Treatment

All the patients were discharged from hospital in a better state than that on admission. It is not possible to claim that this improvement was, in any major way, due to the Sernyl experiences because this treatment was but a part of the total therapeutic regime. One obsessional patient, though obtaining relief from her obsessions on the day of the Sernyl treatment, became increasingly depressed and received electro-convulsive therapy. It was not, however, thought that this was necessarily due to the Sernyl treatment. The other obsessional patients both believed that they had derived benefit from the treatment, while the other two patients appeared to be helped by the abreactions that occurred. It was expected that with this type of intensive treatment, difficult transference problems would arise, and these did, in fact, occur with two patients.

Discussion

Only the possible therapeutic use of this drug will be considered here, as its action and comparison with other drugs had been mentioned in the previous paper.

In these five patients, Sernyl proved to be an effective abreactive agent,

marked abreactions occurring in each patient as significant episodes in their lives were remembered. This reaction was more marked and more effective than with sodium amytal (that all patients had received) and methedrine (that two had received). It seems likely that the changes in bodily sensations that occur may contribute significantly in assisting this abreaction. These patients all had long-standing illnesses but the results suggest that Sernyl might be evaluated as an abreactive agent in more acute conditions that have been precipitated by some catastrophe.

Perhaps more interesting are the results obtained in the obsessional patients, patient 5's history being particularly interesting in this respect. The transitory relief of obsessions after the experience is unlike that of LSD which often makes these patients worse for a time (Sandison *et al.*, 1954). This appears to be a profitable line for further investigation.

Oral Sernyl was only available towards the end of the investigation but preliminary results suggest that side-effects—e.g. dizziness and ataxia—may make dosage difficult to adjust. A few reports are available in the American literature about the use of oral Sernyl. Bodi *et al.* (1959) treated 32 patients with "psychosomatic disorders" with oral Sernyl. They found that it appeared to be effective in mild to moderately severe anxiety states, though side-effects were common. 1·5–3 mg. a day seemed the optimum dosage.

As has been mentioned, a common symptom of Sernyl administration is numbness of the face. Meyer *et al.* (1959) have used it to treat patients with facial pains occurring in various neurological syndromes; however, a third of the patients developed undesirable psychological symptoms of the type described.

Case Histories

1. An attractive 31-year-old woman was admitted to hospital complaining of depression, anxiety and restlessness. Her father had been a violent-tempered seaman who committed suicide at the age of 40 when the patient was 10. After this, his widow became increasingly irritable and unsympathetic towards her children. Our patient was the third of five children, only one of whom appears to be free of psychopathic traits.

In early childhood the patient was enuretic and frequently would wander away from home for many hours. She did well at school, however, and was a popular companion. On leaving school she worked in a baker's shop, but became bored and left. By the time she was admitted to hospital she had had forty-three different employments, but she had completed three years' nursing training and had worked in several hospitals on the continent.

At the age of 12, she was sexually assaulted and since the age of 18 had a series of intimate love affairs with several men. She was a sociable, outgoing and energetic woman, but was subject to unpredictable mood swings and there were obsessive traits in her personality make-up.

In 1955 she became irritable and depressed and received treatment from her general practitioner for nine months. In 1956, the symptoms returned with increased severity and she received out-patient psychiatric treatment. Despite this, attacks of anxiety and depression occurred, often with no apparent precipitating cause.

Two months before admission, after a quarrel with her fiancé, she broke off the engagement and, soon after this, her attacks of anxiety became more frequent and more severe.

Progress and Treatment. Initial psychiatric interviews were not productive, the patient denying her many personal problems. Sodium amytal interviews made her more relaxed but there was no affectively charged talk. A course of Sernyl was then given, twelve treatments being given in all. 1 mg. was given at first and this produced "a pleasant feeling—but I'm not quite real". At the next session she felt relaxed at first but then abreacted violently as she talked about her fiancé. Throughout the remaining sessions she talked easily but with marked emotion about her disturbed childhood and her series of love affairs. These abreactions occurred after disturbances in bodily sensations—"The reaction is rapid—I feel to be of different sizes—big and small, big and small—space does not mean a thing—it's delicious—the fingers of my left hand have become like pin-points and then the tiny, huge sensation comes over me in waves—I remember feeling like that when I was ill at about 7 years of age".

She was discharged from hospital five months after admission. Her symptoms had improved, but no basic personality modification had occurred.

2. A 34-year-old woman was admitted to hospital with symptoms associated with a chronic mild depressive illness.

Her parents' married life had not been happy, there had been many quarrels and the father, a friendly, tolerant man, finally left his wife in 1953. Her mother had always been "difficult and temperamental" and she had made four suicidal attempts before finally being successful in 1956. The patient is the eldest of four children and is the only one who has had psychiatric treatment.

Our patient developed normally and she did well at school until the parental quarrels increased in frequency and severity, when her school record deteriorated sharply. When she was nineteen she was invalided out of the A.T.S. on psychiatric grounds and thereafter took a series of jobs until she married in 1946. This, however, was not a success and after a year she separated from her husband and was later divorced. As a person she was sociable but liable to minor mood swings and was never able to make decisions easily. She was sexually cold and complained, in fact, of "having shallow emotions".

Her present symptoms began in 1953 when her parents separated. "I tried to shut their problems out of my mind but I felt I was running away from my mother—I felt very guilty." Depression and indecision became more prominent after her mother's death and she also developed symptoms of depersonalization. Her work deteriorated and she said, "I had no incentive to live, yet I was afraid to take my life."

Treatment and Progress. After a month of twice weekly interviews, during which little affectively charged material was obtained, she seemed more depressed. Over a period of six weeks a weekly interview with methedrine was given. During this time she was, for the first time, able to talk about her feelings for her mother. Then she received nine injections of Sernyl over a five-week period. During these interviews she became very restless and there was much emotionally charged talk about her mother—this generally was concerned with her guilt feelings—"I killed my mother, I killed her, I killed her, I hate myself, I hate myself, I hate myself, I'm so wicked, wicked." Echolalia was quite marked in these interviews (unlike the Methedrine ones) as this example shows. In addition disturbances of bodily sensations occurred—"I feel to be floating, unreal, and my body feels different." After such an interview she wrote, "I feel relaxed and can't remember very well what I said and what I did."

On one occasion, unknown to the patient, Methedrine was given in place of Sernyl—"It's not the same today, is it? Usually I feel I want to throw myself about, but I don't now—I do not feel as funny as I usually do".

The clinical impression was that the patient derived benefit from the course of treatment. She left hospital after a five-month stay, having obtained new employment for herself.

3. A Maltese woman of 33 years was admitted to hospital for the treatment of a severe obsessional neurosis of some 12 years standing. Her father had died at the age of 60 of neurosyphilis; he was described as a strict, intolerant man. The mother is alive and well. The patient has a twin brother and together they are the youngest of seven children. Nothing definite is known about these siblings as they are in Malta, but all are described by the patient as being "highly strung and all make mountains out of molehills". They came from a middle-class home and there was a good standard of living. Her childhood appeared normal and there is no evidence of any neurotic traits. She was an average scholar and on leaving school, became a seamstress.

She first met her husband when he was serving in the Army and was stationed in Malta. They married seven years later but sexual relations were never satisfactory. There are two children, aged nine and four. Her personality is described as gay, happy, friendly but always over-particular about cleanliness.

Present Illness. For twelve years prior to admission she had become increasingly concerned with cleanliness. She would not allow any of the family to touch her things and if any of them touched her, she would have to wash herself. Gradually her activities became more and more limited and she would not touch things. She burnt many sets of clothes as she was unable to wash them. Compulsive hand-washing became more and more frequent and the condition of her home became filthy as she was finally unable to do any cleaning. On examination she was a small, undernourished woman, she was dirty and her teeth and hair were badly neglected. She washed her hands after touching anything, she was fairly cheerful on admission but was fearful of eating and washing in the communal atmosphere.

Treatment and Progress. She was treated with two injections per week of Sernyl, after initial sodium amytal interviews. During the interviews (sixteen in all) changes in bodily sensations were prominent. She talked much more freely and restlessness and echolalia were prominent. Prominent, too, was the fact that after every injection, for periods varying from 1–3 hours, there was a definite diminution in the obsessions. She would eat in company and wash from the communal basin. This relief was not obtained with intravenous sodium amytal. She abreacted many emotionally charged childhood episodes and sexually charged adolescent ones. A transitory feeling she described as, "I feel I am dying" occurred on nearly each occasion. Throughout the course of treatment she became gradually more depressed, but the relief of the obsessions that occurred after the injections suggested that oral Sernyl might help. However, with even a small dose (2·5 mg.) she complained of dizziness and after a few days this had to be discontinued. A course of E.C.T. helped her depressive symptoms and the patient was finally discharged having derived some benefit from her stay in hospital.

4. A 21-year-old nursing student, was admitted to hospital for the treatment of anorexia nervosa of nine months' standing. Prominent in the story were the marked obsessional traits in the personality make-up. Her father, a salesman, is alive, aged 47; he is a bad-tempered man who, for many years, has been frequently drunk. When the patient was thirteen, her mother left home and has not been heard of since. Prior to this there had been many parental quarrels, generally precipitated by the excessive drinking of both parties. When the patient was seventeen, her father remarried and the onset of the anorexia conceded with her stepmother's first pregnancy.

The patient's early childhood was marred by parental quarrels, but she did well at school, where she stayed until she was sixteen. She then took up office work until she began her nursing training at the age of nineteen.

Until her illness her periods had been normal. There had been no sexual experiences and sexual phantasies were denied. In 1955 she was thrown from a horse, was concussed and thereafter developed an illness characterized by anxiety, depressive and hysterical features, which was treated with E.C.T. Obsessional traits were prominent in her personality make-up, as were her difficulties in making friendships with men. Her illness began nine months before admission, when she started to diet and then rapidly lost weight. Amenorrhoea developed and weight loss continued until she had lost 3 stones in weight by the time she was admitted. She was seen on three occasions a week for psychotherapy. However, little emotionally charged material was obtained, her obsessional defences seemed to prevent any progress. On admission she was depressed and later, in association with a marked mood swing, she commenced to eat more and put on weight. She was discharged after two months in hospital, but was re-admitted two months later with a return of the symptoms. On this occasion, in addition to general management of the feeding problem, interviews under Sernyl were given, 2–3 per week.

She talked much more freely under the drug. Restlessness, sensations of bodily change and echolalia were marked. So, too, was a feeling of calmness and euphoria that persisted for 1–4 hours after the injection. Immediately after the injection there were no feeding difficulties. Prior to treatment with Sernyl, she felt that after eating she must walk rapidly round the garden half-a-dozen times. She was quite unable to prevent herself doing this, though she recognized its uselessness as a means of weight reduction. During the course of treatment, this particular symptom completely disappeared. There were marked abreactions about her parents—notably her mother, who had suddenly disappeared from her life. The desire to be "young, thin and a child" was frequently expressed as was her desire for food and the guilt feelings when she did eat.

As has been said, after the injection, she generally felt quite different; she wrote, "I felt like a child at supper, then I felt like skipping and dancing; I gave in to this feeling and felt so happy, I felt so light and wanted my food; I felt all the nurses were fond of me because I was a child. Later I became myself again and I realized I just can't be a child."

After sixteen treatments it was felt that psychotherapy without the drug was possible, and this is being continued with a gradual improvement in the patient's general condition.

5. A batchelor of 40 years was admitted to hospital because of an obsessional neurosis of ten years' standing. He is an only child and his parents are both alive and well. There is evidence in the mother of a marked obsessional personality. The family background was stable and financially secure. There is no history of neurotic traits in childhood. He stayed at school until he was 14 and was a less than average scholar. On leaving school he took up an office job and thereafter had a succession of jobs. He generally left, either because of his inefficiency or because he disliked the job. For three years prior to admission he had worked as a Post Office sorter. There appears to have been little sexual activity until he was in the late twenties, when he started to masturbate, always accompanied by sadistic phantasies—generally torturing women. He has always been a lonely man with no close friends, and is particularly shy of women.

His illness began about ten years previously—he started to arrange and re-arrange things in his rooms, he had to post letters without them touching the letterbox and to read the newspapers in a set order. Gradually the compulsions became more severe until, prior to admission, he was continually late for work because of his rituals in dressing and tidying his room. In 1955, he had nine months of psycho-analytic treatment which he terminated himself. On admission he was of asthenic build and was co-operative and of average intelligence. He talked well, with a knowledge of psychological terms, and was well aware of the intractable nature of long-standing obsessional illness.

Treatment and Progress. Treatment was commenced with LSD, given intravenously. He received fourteen injections of LSD with an increasing amount on each occasion—reaching 700 μg. Little reaction occurred at the initial interviews but later interviews took on a very similar form which can best be summarized by his own description—"Following the injection, a rather unpleasant sensation came in—it was a combination of physical and mental discomfort. There was a nightmare world of blood and horror and horrible mental images of bodies with open wounds, bleeding, cut about, images of closed feminine eyes isolated from their bodies. All these images seemed to have movement—there was a kaleidoscope of bleeding bodies."

In addition, there were sexual phantasies about his mother and accounts from the many books on sadism that he had read. Then, unknown to the patient, 4 mg. of Sernyl was given

I.V. His talk was noted down—"It has worked rapidly today. Are you a doctor—am I insane—am I insane—am I dead—am I a sadist—am I a terrible sadist—why am I a sadist—am I talking—am I talking—blood, horror, torture—am I a sexual pervert—am I a sadist—killing and blood—torture, horror, death, killing—I am a murderer, I am Jack the Ripper—I want to wallow in blood—I want to love little girls, love little girls, love little girls. I am a sadist. I want to kill, destroy, slash, kill—am I a sadist?"

This kind of talk persisted for an hour, then he said, "I seem to have done a lot of incoherent talking. I don't seem to have had any horrible images. I just feel as if I have done a lot of silly talking—I seem to have lost contact with reality." Later he wrote about this first Sernyl experience—"I cannot remember much but it was not such an unpleasant experience as previously. There was no sense of physical and mental torment and no horrific mental images. I seemed to pass rapidly into a sort of state of delirium though I don't suppose this is the correct word. I appeared to lose touch with reality and seemed to spend much time in incoherent babbling of silly, obscene things. I seemed to be in another world, but I am afraid that the memory of the session is rather vague, hazy and not at all vivid as on previous occasions."

Thereafter he received 7 further injections of Sernyl and similar happenings occurred. The repetition of sentences and the subsequent poor recollection of the session being the main points.

The LSD experiences were extremely unpleasant ones for him, while the effect of Sernyl was not unpleasant; while the main effects of Sernyl passed off within 1–1½ hours, again, as in the two previous patients, there was a definite diminution of obsessional rituals for up to three hours afterwards. After LSD, however, he writes, "There is a desire to act in a compulsive way and there seems to be an increase in compulsive behaviour—it seems to be stepped up by the drug." This contrast between the drugs was interesting.

Throughout his three month stay in hospital he gradually improved and on discharge, he felt himself considerably improved to his state on admission.

Summary

Five patients, suffering from long-standing psychoneurotic illnesses, received 60 treatments with I.V. Sernyl. The method of using the drug, and the drug experiences, are described and its possible value as a therapeutic agent discussed. Sernyl may prove to be valuable as a potent abreactive agent. Investigation into its use in obsessional states is also suggested.

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References

1. Bodi, T., Share, I., Levy, H., and Meyer, J. H., *Antibiotic Med. and Clin. Ther.*, 1959, **6,** 79.
2. Busch, A. K., and Johnson, W. C., *Dis. Nerv. System.*, 1950, **11,** 241.
3. Greifenstein, F. E., de Vault, M., Yoshitake, J., and Gajewski, J. E., *Anaesthesia and Analgesia*, 1958, **37,** 283.
4. Luby, E. D., Cohen, B. D., Rossenbaum, G., Gottlieb, J. S., and Kelley, R., *A.M.A. Arch. Neurol. Psychiat.*, 1959, **81,** 363.
5. Meyer, J. S., Greiffenstein, F., and de Vault, M., *J. Nerv. Ment. Dis.*, 1959, **129,** 54.
6. Sandison, R. A., Spencer, A. M., and Whitelaw, J. D. A., *J. Ment. Sci.*, 1954, **100,** 491.