

ATTENUATION OF ANTICIPATION: A THERAPEUTIC USE OF LYSERGIC ACID DIETHYLAMIDE*

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LSD has profound and incisive impact on the mental and autonomic apparatus of human beings. It has aroused widespread interest in various fields, and the search for new and therapeutic uses continues. This study explores the therapeutic possibilities of LSD in the treatment of the painful terminal stages of serious disease.

The treatment of painful and desperate situations where death is imminent has been relatively neglected in the literature. Observing patients in such straits, one is struck with the fact that some mechanism must protect them from the devastating realization of hopelessness. Gravely ill patients can sometimes give voice to such ideas, but full realization is nevertheless lacking. The "desperate" situation of the terminal patient is only quantitatively different from that of any person who can anticipate the possibility of death at any time with some probability, and ultimately, with certainty. We can, therefore, assume that the mechanism that protects us from the daily realization of our doomed situation operates with greater force in the terminal patient.

A decrease of anticipation may be such a mechanism. The ability to anticipate is an extremely useful genetic development for human survival and dominance. There are situations, however, where anticipation can also diminish the security and peace of patients. Inescapable doom, such as seen in terminal stages of serious disease, represents such a situation. Under these conditions, we may seek pharmacologic help to reduce anticipation where such can offer nothing to the welfare of the patient and can only accentuate his feeling of helplessness.

It is one of the striking features of the psychedelic experience that pursuits of goals and purposeful activity lose their compelling character.¹ This implies a change in the apprehension of the future and in the ability to anticipate, without which the entire edifice of human civilization could not exist. Anticipation is contingent on the ability to use words meaningfully, to form and manipulate symbols. The power of symbol formation enables the

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individual to enact a situation "in theory," without actual sensory input. Anticipation, of necessity, deals with events which can be apprehended "in theory" only.

In the LSD experience, words lose their significance.² While the superficial symbolic verbal structure remains intact and permits simple "conversations," the full resonance of the symbol, by which it is capable of reproducing the same impact as peripheral sensory input, is greatly diminished. The impact of peripheral sensory input is correspondingly increased; and should it contain evidence of imminent danger, the individual will react appropriately, but he will not anticipate danger in the absence of sensory evidence.

The pre-verbal infant depends in just this way on sensory input, and persons under LSD resemble such a child, who flutters from one pleasurable experience or fantasy to another, oblivious of consequence.

In modern western civilization, we are very much aware of the future, as shown by our interest in "planning" for it and "insuring" it. We depend on anticipation not only for orientation but also for defense and procurement of food (maintenance of existence). This emphasis on anticipation makes the desperate situation particularly painful, while it is precisely in this situation that the individual no longer needs anticipation for survival.

Thoughts, fantasies, and sensory input, occurring in fact, in the present, have a resonance in the central nervous system along channels created by past experience. They can also restrict this psychic resonance; it may be diminished by the "naming" of the experience. With the decrease in the power of words in the LSD experience, their containing ability is decreased, and the immediate sensory life gains in range of significance as well as in strength. This makes it possible for the gravely ill individual to be led into an expanded, awesome sensory world, hitherto unknown to him, and thus to be distracted from his failing body.

Thus, we have elaborated so far on two characteristics of the LSD experience which are of possible therapeutic use in situations where anticipation is of less use than in ordinary life: (1) the loss of the ability to anticipate, through the lessening of the power of words, and (2) the expansion of the immediate sensory life.

Symbol formation and consequent anticipation, so vital to survival in ordinary life, serve in grave situations only to augment

the torture of the future. The LSD experience may therefore be of benefit in such situations, and thus, it seems possible that in addition to its very potent analgesic qualities, described in a previous report,³ LSD has even more penetrating psychic actions in the area of emotional reactions to grave disease and impending death.

The analgesic potential of LSD may be based on four factors; first, it seems to deprive the patient of his ability to concentrate on one specific sensory input, even if the input is of urgent survival value. Second, "minor" sensations, namely those of less importance for survival, make a claim on the patient's attention sometimes in preference to those of major survival significance. Third, it diminishes cortical control of thoughts, concepts, or ideas and reduces their significance in control of vegetative function and behavior in general. The meaning of pain, as discussed below, and its frightful psychic resonance (such as possible doom and destruction) is greatly alleviated. The most incisive fourth factor is that LSD obliterates the individual's ego boundaries.⁴ In consequence, a geographic separation can more easily be made between the self and the ailing part.^{5, 6}

Beyond the fundamental tension of the pain affect (tension between the desire to distance oneself from the ailing part and the desire to remain whole), a sensory input which is unremovable (such as pathologic pain) can produce a specially unbearable tension by virtue of its very inevitability. This inevitability has its own psychic resonance (primarily in the area of anticipation of death and destruction) which contributes to the total psychic resonance of the pain experience. Pain tension is more easily tolerable if, either in fantasy or reality, it can be escaped from; if it is avoidable; if there is some escape hatch through which the tension can be released. Further observations have led us to feel that maneuvers such as shouting, twisting, turning, and restlessness in general are basically attempts to search for such an escape hatch.

In very sick patients such as those involved in this study, inevitability becomes a major component in the unbearability of the pain tension; and the possibility of escape, through loosening of the ego boundaries, may be exactly what LSD offers. The unbearable tension of inevitable pain, continued over time, will produce depression, which may lead to early and precipitous death.

This is reminiscent of the well-known behavior of animals in a Skinner box, when inescapable electric shocks are administered. First, the animal will behave like a patient with renal colic; he will jump around, fuss, grimace, and twist as though he hoped that some of this maneuvering might afford him some relief and escape. After a certain time interval, the animal will become quiet and will, in general, display inhibited behavior. This animal behavior, of course, is based on the conditioned reflex. As in any conditioning, if avoidance behavior becomes futile and cortical excitation is spent and frustrated, inhibited behavior sets in.⁷ This inhibited behavior resembles that of a patient in chronic pain due to metastatic malignant disease.

In humans this is further complicated by the ability to anticipate future events, through words, concepts, and ideas, in addition to immediate sensory input. Thus, the hopelessness of the situation can further exert an inhibiting influence on human behavior.

LSD, as stated, diminishes cortical control of words and thoughts, produces changes in the mechanisms of verbal "meaning," and reduces the impact of words on behavior. Thus, the patient is partially deprived of his anticipatory ability, and his immediate sensory input becomes relatively more important and at the same time deprived of its survival content. In this way it is possible to understand why the painful sensory input becomes subservient to other less meaningful sensations.

METHODOLOGY

Only one-dose administrations of LSD were undertaken in this study of 128 patients. All were informed of their diagnosis and were pre-terminal, meaning that death could be foreseen within one to two months. All suffered from malignant diseases with metastases. The diagnoses and sex and age range can be seen in Table 1.

These patients were observed for at least one week prior to LSD administration. Daily visits by the same two observers were made and a relationship was established with them. Discussions ranged from family and social matters to their morbid conditions and death. Patients whose conditions permitted were brought to the pain clinic for administration of LSD; more severely ill patients and those with draining tubes were left on the wards. LSD was administered (100 mcg) following breakfast. From then on the

NUMBER OF PATIENTS: N-128

MEAN AGE 53

FEMALE 103

MALE 25

DIAGNOSES: CA OF BREAST WITH METASTESSES	44
CA OF CERVIX WITH METASTESSES	48
CARCINOMATOSIS	18
CA OF DIGESTIVE TRACT	18

DOSAGE 100 mcg LYSERGIC ACID DIETHYLAMIDE

Table 1. Patient Characteristics

patients were under constant observation until the acute phase had subsided; then they were followed daily for about three weeks. We are aware that this constant observation and attention has its own influence on the painful condition. Since placebo control is inadvisable, we had to be content with the one-week observation period prior to LSD administration as a baseline. There were six deaths among the patients under observation.

The following observations were conducted and will be discussed in detail under "Results":

1. Pain intensity
2. Affective changes
3. Approach to illness and death
4. Sleep patterns
5. Visual disturbances and hallucinations
6. Fear and panic reaction

No other analgesic medication was given during the acute phase of the LSD reaction. Food was not withheld, and most patients were hungry at one time or another during the reaction. Antibiotic, cytotoxic, and hormonal medication was continued as per schedule.

A study of LSD cannot be conducted double-blind, for it is immediately obvious when a patient has received LSD. The patients also become immediately aware that something incisive has happened to them. While they were not forewarned of the LSD administration in this study, they were told that they had

received a potent medicine, that they would feel peculiar. This procedure was used to obviate additional anticipation of panic and fear.

RESULTS

About 30% of the patients said they would be unwilling to repeat the administration if it were offered. This percentage could not be lowered by co-administration of other psychotropic drugs, such as chlorpromazine, MAO inhibitors (imipramine), hypnotics (phenobarbital) or strong narcotics (meperidine). Combined administration of the above drugs produced either no change in the LSD reaction, or obliteration of the reaction, or an increase in the distress of the patient. We could not predict which of these changes of the LSD reaction would occur in a given case.

This increase in distress may have been due to the fact that a person in pain can become very sensitive to additional sensory input, which approaches but does not reach the intensity necessary to distract him from his pain. In patients for whom the LSD experience was modified by administration of another drug, the increased sensory input produced by LSD may have been just enough to function as an annoyance, while not enough to compete successfully with the painful input. Observations made of the analgesic effects of LSD and accompanying reactions fall into six categories.

1. *Pain relief.* Degree of pain was judged by the patient's statement, the observer's opinion, the behavioral characteristics of the patient, and the opinion of ward personnel. Equal weight was given to each of these factors. These impressions were graded in four categories: no pain (0), mild (1), severe (2), and intolerable pain (3).

The over-all pain intensity was appraised by constructing a cumulative pain score, comprising the additive total of the pain intensities for all patients who were in a painful state, per time unit. This method was selected for its simplicity, and over-all informative value. It does not tell the number of patients with a given pain intensity, but it does tell the total pain present at a given time (Figure 1). A precipitous drop in pain occurred about 2-3 hours after LSD administration. This pain relief lasted 12 hours, but the total pain intensity was less for a protracted period (3 weeks).

O: NO PAIN, 1: MILD PAIN, 2: SEVERE PAIN, 3: INTOLERABLE PAIN,

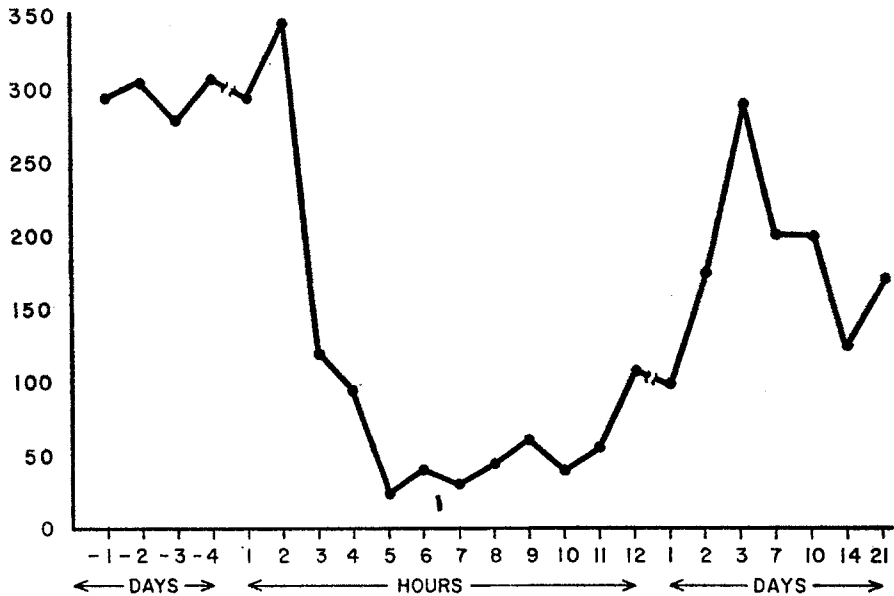


Figure 1. LSD Administration (100 mg.)

2. *Affective changes.* Depressions were classed in three categories: none (0), mild (1), and severe (2). Included here were reactive depressions due to the severe and hopeless illness. Depressions manifest themselves in many ways: somatizations, superimposed on the actual discomfort; a nagging attitude on the part of the patient, which antagonized the ward personnel; motor hypo- or hyperactivity, general lethargy; crying and discussions of hopelessness and doom. From these various signs we made an intuitive appraisal of the patient's depression. Again, the scores of total depression rather than individual figures are given (Figure 2). An additive, cumulative index was created, by numerically adding the degrees of depression. Patients without obvious depression were not counted. There was a general lift of mood, almost euphoria, which lasted for about 11-12 hours, after which time the mood fell to its original level.

3. *Approach to illness and death.* The patient's approach was classified as rather indifferent (0), concerned (1), or very concerned (2). This is a most difficult observation to make, and it was done in an intuitive manner. Only rarely were direct questions used. The appraisal was made by means of a short and hopefully meaningful "chat." It is, of course, intimately associated with an appraisal of depression, but it was deemed worthwhile to develop a separate score. Under LSD, patients were so strikingly unconcerned about death or any other anticipatory concern that

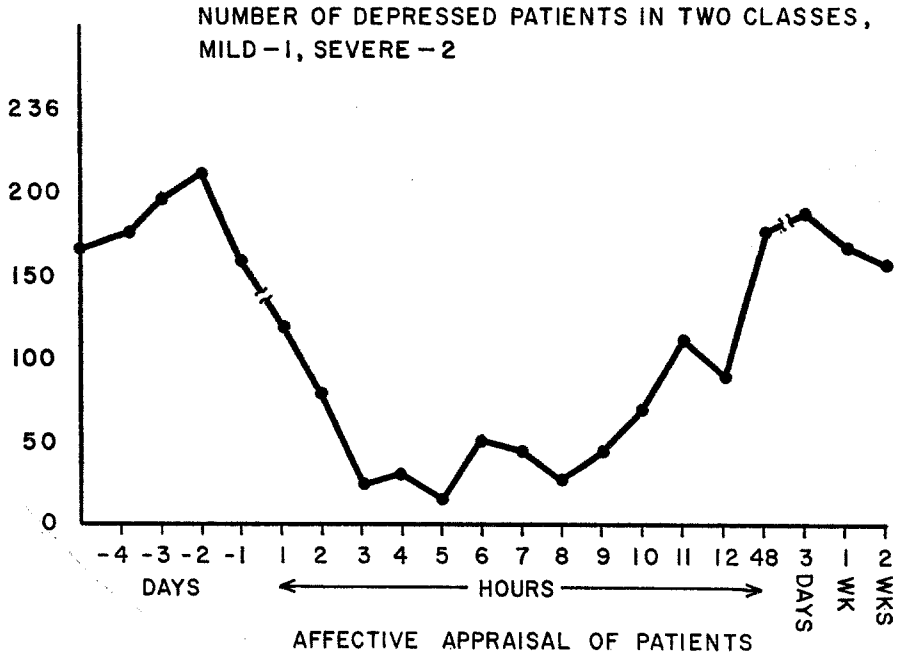
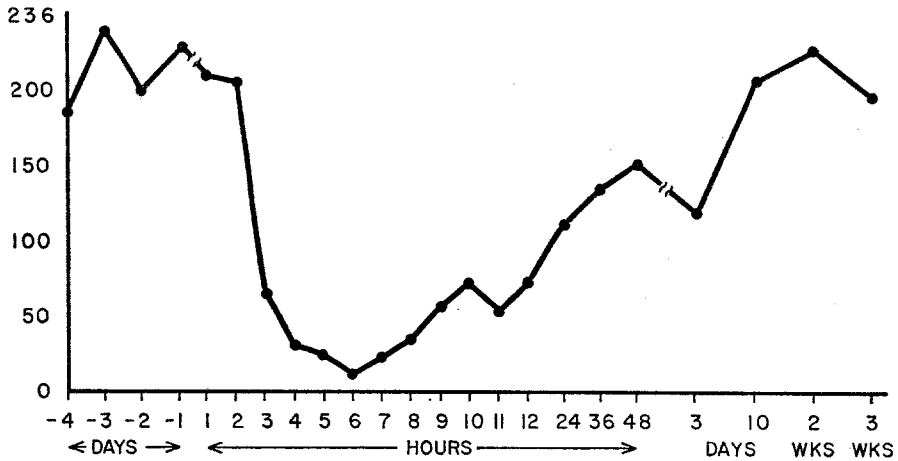


Figure 2.

VERY CONCERNED: 2, CONCERNED: 1, RATHER INDIFFERENT: 0,



APPROACH TO ILLNESS AND DEATH

Figure 3.

this seemed important. Rather often definite evidence of depression (like somatization or nagging attitudes by patients) associated with an air of unconcernedness was encountered. The patient was able to state that death was near, that the situation was hopeless, but felt that this did not matter (Figure 3).

4. *Sleep patterns.* These were classified as no disturbance (0), mild disturbance (1), and insomnia (2). This parameter proved to be rather conclusive and informative. Here, too, was constructed a cumulative index composed of the total additive score of sleep disturbances. The patients sleeping well were not counted.

NO DISTURBANCE:0, MILD DISTURBANCE:1, INSOMNIA:2,

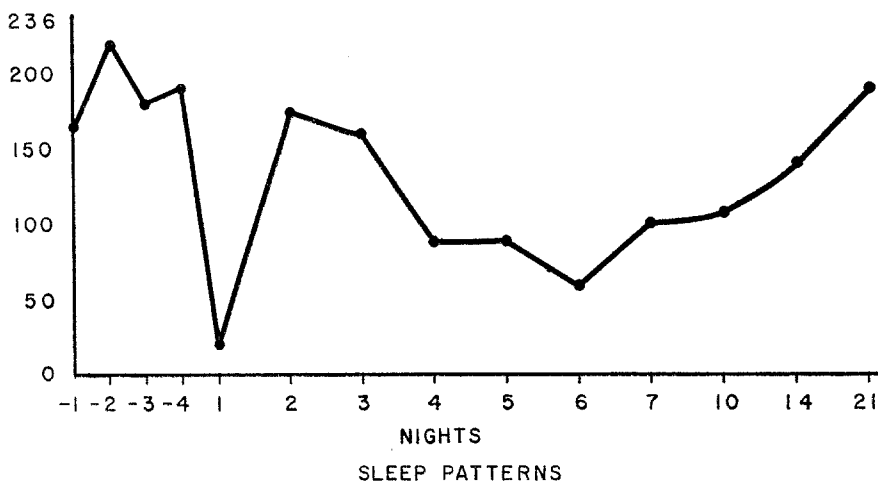


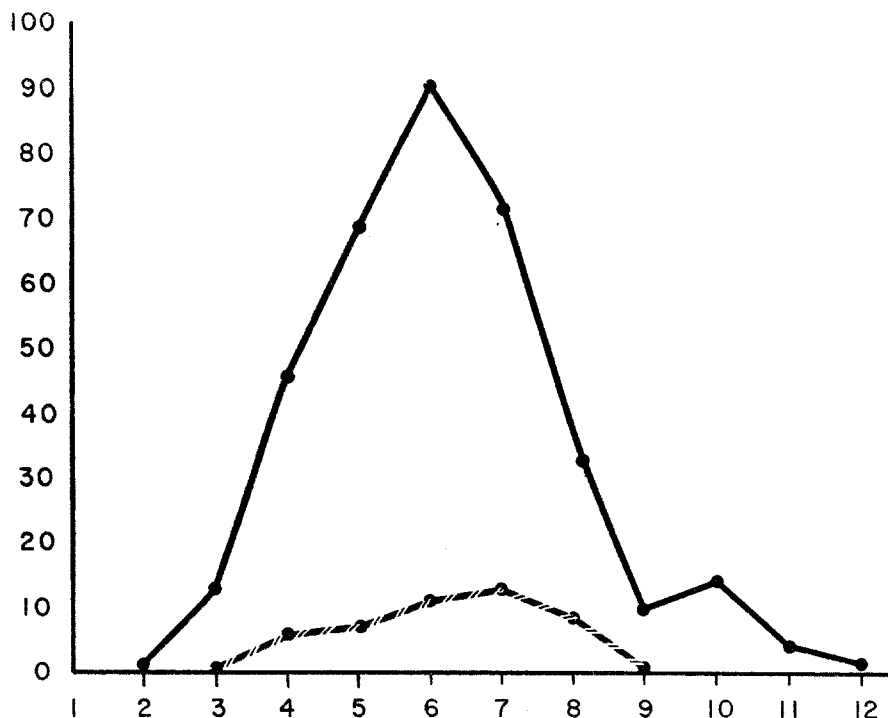
Figure 4.

The sleep patterns too reflect the degree of depression. But as the degree of concernedness was at variance with the degree of depression, so was the sleep pattern. The first night after LSD administration was almost invariably a good one. After that a meaningful reduction of disturbances up to about 10 nights was noted, which is also the time when concern about the morbid condition returned (Figure 4).

The last two parameters concern aspects of the LSD reaction itself, namely the most disturbing and potentially alarming ones.

5. *Visual distortions and hallucinations.* These were classified as none (0), mild (1), and disturbing (2). The degree and frequency appeared less than that for normal volunteers. Those classified as "mild" were reported by the patients with a smile and in a silly fashion. The additive and cumulative index of mild and disturbing visual distortions and hallucinations is contained in the solid line of Figure 5. The broken line in-

HALLUCINATIONS: NONE:0, MILD:1, DISTURBING 2



VISUAL DISTORTIONS AND HALLUCINATIONS

Figure 5.

indicated the number of hallucinations, counted separately and regardless of their severity. The difference between hallucinations and visual distortions is the patient's belief in the actual occurrence of the events he sees (hallucination) or his awareness of the illusory quality of his vision (visual distortion). At the height of the LSD reaction less than 10% of the patients had actual hallucinations, while about 55% (75 patients) confessed to visual distortions (Figure 5).

6. *Fear and panic reaction.* This subtle and meaningful parameter of observation was carefully studied. It was classified as none (0), mild uneasiness and free-floating fear (1), and panic (2). Again, a cumulative index was constructed with these two coded events seen on the upper line (Figure 6) and the numerical panic reactions seen on the lower line. Seven patients had panic, while 42 suffered mild anxiety reactions.

None of the reactions was of sufficiently severe character to terminate the LSD reaction. All were amenable to psychotherapy. This consisted of urging the patient not to fight the panic, not to attempt to maintain

SEEN IN PATIENTS AFTER LSD ADMINISTERED: 0 - NONE,
1 - UNEASINESS 2 - PANIC

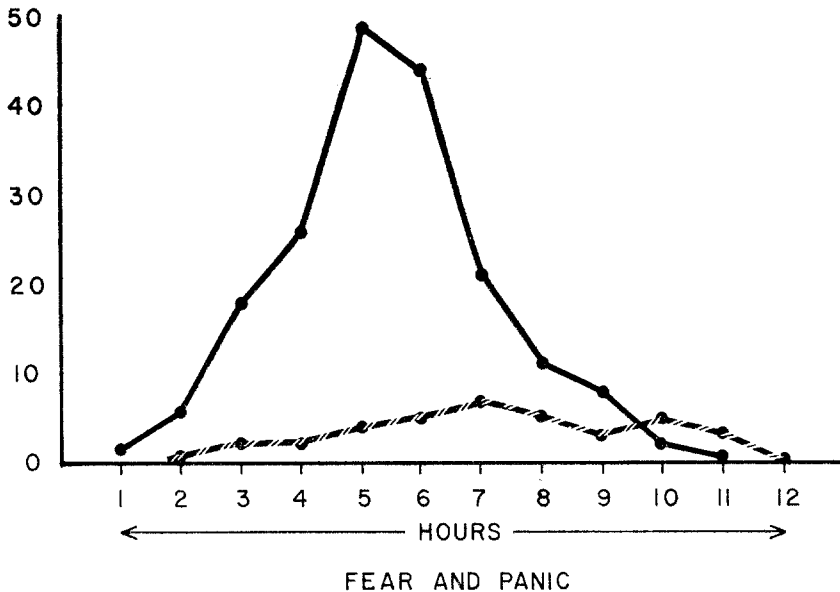


Figure 6.

the control of his "reason," but to engage in the experience and to surrender to whatever the LSD reaction might bring. The panic occasionally seen in the psychedelic experience is probably not related to the frightful or threatening images or fantasies, but to the reluctance of the individual to surrender his aggressive goal directiveness. Such a loss of future aims, depriving aggression of its most powerful impetus, produces an enforced passivity, which has been demonstrated to produce fear and panic.⁸ Goal direction is made difficult by the lessening of the ability to anticipate. If this ability is diminished, the drive for future aims is jeopardized, and the surrender to the immediacy, the moment made mandatory.

It is just this surrender to the immediate sensory input, without further elaboration and attenuation by considerations of the future or the past, which frightens patients. The logical therapeutic response to such fear of surrender is the demonstration of the fact that such a surrender is not dangerous, but can be quite pleasurable. Any attempt to maintain the patient's defenses against submission will increase his fear and panic. He is, to a certain extent, artificially deprived of control of the impact of his sensory life and fantasies and has difficulties contending with such a flood of impressions. The fear, probably not originating in this sensory

input, comes from his attempt to control it with obviously inadequate means.

Statements about the transcendence of the experience or about the fact that it is only a "drug reaction" should be avoided, and suggestions which emphasize the reality of the situation seem also contraindicated. They tend to re-enforce the defenses of the patient. Such emphasis on "reality" may serve as reassurance to the therapist, but does little to alleviate the patient's fear. A courageous and fearless encouragement to engage in the experience and to surrender to it, relieves the patient's apprehension and may avert panic.

It is noteworthy that not one patient, though they were critically ill, had any adverse medical reaction, and the administration of LSD was universally well tolerated.

SUMMARY AND CONCLUSIONS

Theoretical reasons for the use of LSD as an analgesic agent are elaborated. In a series of 128 patients the analgesic action of LSD is further confirmed, and the undesirable pharmacologic effects are discussed. The relative safety of the drug for that use is demonstrated, and further study is recommended.

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