Int. Pharmacopsychiat. *8:* 129–144 (1973)

LSD-Assisted Psychotherapy in Patients with Terminal Cancer

S. Grof[1], *L.E. Goodman*[2], *W.A. Richards*[3] *and A.A. Kurland*[4]

Abstract. The paper describes the results of a clinical study exploring the potential of a complex psychotherapeutic program utilizing psychedelic compounds to alleviate the emotional and physical suffering of cancer patients. A total of 60 cancer patients participated in this experimental study. In 44 of these patients, LSD (200–500 μg *per os*) was administered as an adjunct to psychotherapy; in 19 patients, a new psychedelic compound, dipropyltryptamine (DPT) was administered (60–105 mg i.m.). Three of these patients received both LSD and DPT administered on different sessions.

The therapeutic results were assessed by means of a rating scale reflecting the degree of the patients' depression, psychological isolation, anxiety, difficulty in management, fear of death, and pain. The ratings were done by attending physicians, nurses, family members, LSD therapists and cotherapists, and independent raters. In addition, the amount of narcotics required in the management of the patient was measured before and after the psychedelic sessions.

Systematic rating was carried out in a group of 31 cancer patients treated by LSD. The comparison of the means of individual ratings from pre- to posttreatment showed significant improvement in all the measured parameters for most of the raters. There was a definite reduction of the narcotic medication; it did not, however, reach the level of statistical significance. The pre- to post-treatment comparison of the global indexes used as gross indicators of the degree of emotional and physical distress, indicated that approximately 29 % of the patients showed dramatic improvement, and another 41.9 % moderate improvement, with 22.6 % essentially unchanged. In 6.4 % of the patients, global indexes showed a decrement in the posttherapy ratings.

1 Chief of Psychiatric Research, Maryland Psychiatric Research Center, Box 3235, Baltimore, MD 21228; Assistant Professor of Psychiatry and Behavioral Sciences, The Johns Hopkins University School of Medicine, Baltimore, Md.

2 Attending Surgeon and Head of Oncology Clinic, Sinai Hospital, Baltimore, Md., and Assistant Professor of Surgery, The Johns Hopkins University School of Medicine, Baltimore, Md.

3 Ph.D. Candidate, Research Fellow, Maryland Psychiatric Research Center, Box 3235, Baltimore, MD 21228.

4 Director, Maryland Psychiatric Research Center, Box 3235, Baltimore, MD 21228, and Assistant Commissioner for Research, Maryland Department of Health and Mental Hygiene.

Introduction

The final months of life of the person dying of cancer are marked by increasing physical and emotional suffering. As the patient approaches death, he usually experiences, in addition to physical pain associated with his illness, various degrees of depression, anxiety and psychological isolation. The prospect of impending and inevitable death often leads to feelings of defeat, helplessness and despair in members of his family and even in the attending medical personnel. Heroic efforts are frequently undertaken in an attempt to increase the quantity of days in the patient's life, but very little is done to enhance the quality of intrapersonal and interpersonal life during those final months.

In recent years considerable attention has been focused upon attempts to alleviate the psychological stress and physical pain experienced by the dying cancer patient. Since 1959, when *Feifel*'s book, *The Meaning of Death* (2), appeared, there has been continuing discussion of these problems, highlighted by the conference on 'Care of patients with fatal illness' sponsored by the New York Academy of Sciences in February, 1967. The recent attempts to bring this area of concern to the attention of the public have been spearheaded by the work of *Kübler-Ross* (7). Unfortunately, in spite of the attention given to the subject, there has been little improvement in methods for relieving the mental and physical anguish of the dying cancer patient, and essentially no concrete therapeutic procedures have been developed. Clearly, the suffering caused by terminal cancer is an area urgently in need of more effective treatment. This study was designed to investigate systematically one approach to this dilemma that appears to hold promise: judicious and carefully supervised use of psychedelic substances in conjunction with intensive psychotherapy.

During the past 10 years, a group of psychiatrists and psychologists working in the research unit of Spring Grove State Hospital, and since 1968 in the Clinical Sciences Department of the Maryland Psychiatric Research Center, has been exploring the possibilities of clinical use of psychedelic psychotherapy in

Table I. Basic descriptive characteristics of the psychedelic peak experience according to *Pahnke and Richards* (10)

1	Sense of unity or oneness
2	Transcendence of time and space
3	Deeply felt positive mood (joy, peace and love)
4	Sense of awesomeness and reverence
5	Meaningfulness of psychological and/or philosophical insight
6	Ineffability
7	Paradoxicality
8	Transiency

various categories of emotional disorders. In psychedelic psychotherapy as developed by this group, the use of LSD and other psychoactive compounds is combined with a course of short but intensive psychotherapy (11). The extra-pharmacological variables such as the set and setting of the sessions, are specially structured in order to facilitate the occurrence of the so-called psychedelic peak experience which is considered to be one of the most important mechanisms associated with positive therapeutic results. The essential characteristics of this experience have been described by *Pahnke and Richards* (10) (table I).

The research team at Spring Grove has used this therapeutic approach in the past on chronic alcoholics (8, 11), in patients with various forms of psychoneuroses and character disorders (9, 13), and in narcotic drug addicts (12). Despite severe psychiatric pathology in many of the cases treated, there has been no evidence of long term psychological or physical harm directly attributable to the treatment. A significant finding of both the alcoholic and neurotic study has been that emotional experiences of a profound and meaningful nature have been reliably reproduced.

Our interest in exploring the potential of LSD-assisted psychedelic psychotherapy for alleviating the psychological stress and physical pain experienced by the dying cancer patient began in a rather unforseen manner and under tragic circumstances in 1965. At that time a middle-aged female staff member, Mrs. *G.*, developed carcinoma of the breast associated with a considerable amount of suffering. Having observed the frequent dramatic relief of depression and anxiety following psychedelic treatment in psychiatric patients, she initiated a request as to whether the psychedelic treatment procedure might be of some help in relieving her increasing distress. At that time, the information available on the use of psychedelic drugs in the treatment of cancer patients was rather limited. In the early sixties, *Kast*, of the Chicago Medical School, conducted his pioneering experiments utilizing LSD in terminal cancer. In a series of articles (3–6), he reported that LSD not only had a significant analgesic effect, superior to dihydromorphinone and meperidine, but also in some patients relieved depression, improved sleep and lessened apprehension concerning death. Subsequently, *Cohen* (1) in 1965 was able to confirm *Kast*'s findings in a study involving only a few individuals. He concluded his case history of a single terminal cancer patient by expressing his hope that, 'LSD may one day provide a technique for altering the experience of dying'. These very limited, but encouraging observations, plus our own extensive clinical experiences with LSD-assisted psychotherapy in which almost 200 psychiatric patients had been treated without any serious complications or sequelae led to a decision to proceed with the treatment of Mrs. *G.* Our approach differed considerably from that of *Kast* who had administered the LSD as a chemotherapeutic procedure without even forewarning the patients. In our treatment plan, the objective was to achieve a psychedelic peak experience in the context of brief, intensive psychotherapy. The encouraging

outcome of this pioneering experiment resulted in a series of studies over the intervening years, which have continued up to the present time.

The first few cases were treated under the supervision of Dr. *S. Unger* at Sinai Hospital in Baltimore, where we found a group of unusually open-minded and interested surgeons, headed by Dr. *L.E. Goodman.* Later, the treatment program was taken over by Dr. *W.N. Pahnke,* who remained in this function until his tragic death in July, 1971. Dr. *S. Grof,* who has been in charge of the terminal cancer project since Dr. *Pahnke*'s demise, is currently performing a controlled study with the financial support of the Mary Reynolds Babcock Foundation, Inc. The aim of this research is to obtain more conclusive data in some of the areas indicated by the pilot studies.

As of present, a total of 60 cancer patients have participated in the psychedelic therapy program. In 44 of them, the psychedelic compound used was LSD. Since the long duration of the LSD sessions frequently appeared to be too stressful for the severely debilitated terminal patients, an effort has been made recently to replace LSD by a shorter-acting compound with similar effects, dipropyltryptamine (DPT). An additional obvious advantage of DPT is the fact that it is a new psychedelic substance, unknown in nonmedical circles and as yet uncontaminated by adverse lay publicity. Our experience with the latter drug now involves 19 cancer patients. Three of these patients were treated both with LSD and DPT, administered on different occasions.

Present Study

Methodology

Selection of the Patients and Description of the Sample

The patients were referred to the research program by Dr. *Louis E. Goodman,* Chief of Oncology Service at Sinai Hospital, and by other interested physicians. After referral, each potential candidate was interviewed by the psychiatrist from the Maryland Psychiatric Research Center. The initial selection criteria were the presence of some degree of physical pain, depression, anxiety and psychological isolation associated with malignancy. Another factor considered was a frustrating feeling on the part of the hospital staff that all the conventional medical approaches had been tried and that nothing could be offered to the patients along these lines. The emotional distress of the relatives also played a role in the selection. A reasonable survival expectancy of at least 3 months was a necessary prerequisite for the acceptance into the research program. The presence of brain metastases, organic brain damage, epilepsy, severe cardivascular disorders, or overt psychotic disturbances were considered contraindications for psychedelic psychotherapy, and the patients suffering from these disorders were

Table II. Narcotic scale of equivalent dosages

Numorphan	1 mg	all these dosages are assigned an equivalent value of 1 unit
Dilaudid	2 mg	
Demerol	50 mg	
Codeine	30 mg	
Morphine	8 mg	
Methadone	5 mg	
Pantopon	10 mg	
Percodan	1 tablet	

excluded from further consideration. After screening by psychiatric interview and psychological testing, an informed consent was obtained in writing from the patient and his family. The interviewing psychiatrist discussed openly the possible benefits and dangers of this form of psychotherapy. The sensationalistic coverage in the mass media of the current dangerous abuse of LSD in the United States had frightened some of the potential candidates to such a degree that they refused to participate in the treatment. This influence also made the task of preparation for a positive experience more difficult for those who accepted the treatment.

Some of the LSD patients were treated in the initial phase of this research before the rating procedure was developed. The data on the DPT patients are still being collected and will be analyzed later. This presentation is based on the data from 31 terminal cancer patients treated by LSD-assisted psychotherapy. This group included 8 males and 23 females. Their ages ranged from 35 to 81, the mean age being 54 years. 24 patients were married, 2 were single, 2 widowed, and 3 divorced. 26 of the patients were Caucasian; 5 were Negro. In terms of religious background, 16 were Jewish, 14 were Protestant, and 1 was Catholic. The time that had elapsed since the first diagnosis of cancer ranged from 13 years to 1 month, with a mean of 34 months. According to the three stages of disease suggested by *Weisman* (14, 15), 1 patient was classified in stage I, 'The initial stage of reduced alternatives'; 20 patients qualified for stage II, 'The intermediate stage of middle knowledge'; and 10 patients fell into stage III, 'The terminal stage of counter control and cessation'. Data for individual subjects, including the site of primary cancer, the extent of metastases, and the average consumption of narcotics per day before LSD therapy in equivalent units (table II) are presented in table III.

Therapeutic Procedure

The treatment procedure consisted of three mutually interrelated phases: a series of drug-free interviews in which rapport was established and the patient was prepared for the drug session; the psychedelic session itself; and several subsequent drug-free interviews for the integration of the session. The prepara-

Table III. Basic medical characteristics of the group of cancer patients treated by LSD-assisted psychotherapy

Case	Age, years	Sex	Primary cancer	Metastases	Time since first diagnosis, years	Stage of disease[1], I–III	Narcotics, average amount per day, pre-LSD
C-1	57	F	breast	spine	11	II	5.2
C-2	58	F	breast	skin of chest wall	3	II	0
C-3	51	F	lung	abdomen	2	II	6.1
C-4	57	M	right biceps	generalized, lung, liver, spine	13	III	8.0
C-5	46	F	rectum	lower abdomen	1[2]	II	4.2
C-6	47	M	lung	liver	2[2]	II	0
C-7	57	F	colon	liver, lung	1	III	1.9
C-8	56	M	rectum	abdomen	1	II	1.0
C-9	57	F	breast	pelvis, lungs, ribs	5[2]	II	0
C-10	46	M	kidney	lung	5[2]	III	4.0
C-11	60	F	breast	axilla	4	III	2.0
C-12	57	F	breast	spine, liver, bone	6	II	6.0
C-13	81	M	paranasal epidermoid	skull bones (orbit)	2	II	0
C-14	35	F	ovary	abdomen	2	III	0.5
C-15	58	F	unknown	lungs	1	III	1.9
C-16	48	F	breast	pulmonary edema	1	III	5.2
C-17	72	M	lungs	bone	1	III	6.7
C-18	81	F	vulva	inguinal and iliac nodes	2	III	5.0
C-19	37	F	breast	none	1	I	0
C-20	42	F	breast	bone, skin	3	II	2.0
C-21	63	M	lungs	pleural cavity	9	II	1.7
C-22	62	F	breast	lungs	2	II	1.0
C-23	53	F	rectum	abdomen	1	II	0.5
C-24	47	F	breast	spine	3	II	0
C-25	70	M	undifferen-tiated	prostate, bone	2[2]	III	1.6
C-26	39	F	breast	ovaries, lungs	1	II	4.0
C-27	58	F	breast	bone	5	II	2.4
C-28	44	F	breast	lung, adrenal, bone	6	II	3.9
C-29	50	F	breast	bone	1	II	0
C-30	59	F	colon	bone	1	II	2.7
C-31	49	F	colon	liver, bladder	4	II	2.5

tion usually lasted 6–12 h (average 9.75 h) extended over a period of 2 or 3 weeks. Since a good therapeutic relationship and atmosphere of basic trust seems to be the single most important variable in successful psychedelic therapy, much effort was exercised during the preparatory period to establish a close rapport and give the preparatory sessions the quality of real human encounter. The actual psychotherapeutic work generally focused on the present situation, including unresolved issues between the patient and family members; problems of confronting and accepting diagnosis, prognosis and death; and significant intrapsychic conflicts that became evident as the therapeutic relationship developed. No sustained attempts were made to probe into deep conflict material or traumata in contrast to our usual procedure with alcoholics, narcotic drug addicts and neurotic patients. Primary emphasis was placed not upon death, but upon living whatever time remained in as full and meaningful a manner as possible. Many of the discussions with the patients tended to revolve about philosophical issues and current interpersonal relationships with significant figures in their lives. This necessitated the involvement of the family members as much as possible in order to open up a greater degree of communication. Families were seen both with and without the patient. They were given a chance to discuss their own feelings about the approaching death and were encouraged to increase their interaction on as many levels as were appropriate in order to decrease the psychological isolation experienced by most cancer patients. Their fear of upsetting the patient and the fear of death itself were typically the most significant issues. Our usual practice was not to confront the patient indiscriminately and routinely with the diagnosis and the fatal outcome of his illness. It was important, however, for the therapist to be willing to discuss issues of diagnosis and prognosis when the patient was ready for such discussions and to be on guard lest his own anxiety over such an encounter unconsciously lead him to give nonverbal cues to the patient that such a subject was not to be discussed. In this tenuous situation, reliance was placed on the intuitive sensitivity of the therapist in charting the course.

When major issues had been explored and a good therapeutic relationship had been established between the patient and the therapist, plans were made for the actual psychedelic session. In a special interview immediately preceding the drug session, the patient received specific and comprehensive instructions concerning the nature of the altered states of consciousness induced by psychedelic drugs and the technical aspects of the session.

---

1 *Weisman*'s classification of stages: stage I, The initial stage of reduced alternatives; stage II, The intermediate stage of middle knowledge; stage III, The terminal stage of counter control and cessation.

2 Given in months.

The drugs were administered in a private room at Sinai Hospital; the therapist and a trained psychedelic nurse were present during the entire session, providing constant guidance and support for the patient. On the day prior to the session, flowers were brought into the patient's room, and portable stereophonic music equipment was set up. On the day of treatment, carefully selected classical music was played to channel affective expression, facilitate relaxation and provide continuity of the psychedelic experience. Occasionally, family photographs were used to help resolve interpersonal difficulties and to mobilize positive feelings.

In the evening of the treatment day, relevant persons from the patient's life, such as spouse, children, parents, or good friends, according to circumstances, were invited by the therapist to share the termination period of the session with the patient, after he had returned to his usual state of consciousness. The average time spent by the therapist in the LSD session was 11.15 h.

Immediately following the psychedelic session and during the subsequent days, the therapeutic effort focused upon working through, integrating and consolidating the psychedelic experience. The patients were asked to write out or dictate a subjective account of the session in as much detail as possible.

Assessment of the Results

According to the original research design, each patient was expected to complete the POI and MMPI before and after treatment. This, however, turned out to be a rather unrealistic expectation, for these psychological tests require a degree of concentration that for many patients with cancer is almost rendered impossible by physical pain and exhaustion. As a result of this, primary emphasis had to be placed on independent ratings by external observers, rather than on self-administered tests. For this purpose a special rating scale was developed by *Pahnke and Richards* (fig. 1). This instrument makes it possible to obtain 13 separate values ranging from + 6 to −6 reflecting the degree of the patient's depression, psychological isolation, anxiety, difficulty in management for all complaints, fear of death, and pain. The ratings with the use of this instrument were made before and after treatment by attending physicians, nurses, family members, LSD therapists and cotherapists and an independent rater. In addition, the amount of physical pain and/or pain tolerance was assessed on the basis of the amount of narcotics required in the management of the patient. The dosages of various narcotics were unified according to the narcotic scale of equivalent dosages (table II).

Data Analysis

The effectiveness of the psychedelic treatment program was estimated by performing statistical tests of significance on the pre- and post-session assessments of the clinical condition of the patient as reflected by the values assigned

Name of patient _____ Rating No. 1 2 3 4 (circle)

Name of evaluator _____ Date of evaluation _____

Instructions. Please rate the emotional condition of this patient on each of the continua listed below (A–F). Circle the *one* number from −6 to + 6 that best signifies your assessment of the present *dominant* state of this patient on each continuum, using the following scale of *intensity*.

0 = Point of balance between the two ends of a continuum
1 = Very slight
2 = Slight
3 = Somewhat
4 = Moderate
5 = Strong
6 = Very strong or extreme

If you are unable to obtain the information necessary to responsibly rate the patient on any continuum, place a question mark in front of the capital letter designating that particular continuum.

A *Depression;* sadness; despair — Sense of *well being;* inner confidence; joy
−6 −5 −4 −3 −2 −1 0 +1 +2 +3 +4 +5 +6

B Psychological *isolation;* withdrawal from warmth and depth in relating to others; shallowness; defensiveness — Psychological *openness;* warmth and depth in relating to others; honesty; genuineness
−6 −5 −4 −3 −2 −1 0 +1 +2 +3 +4 +5 +6

C *Anxiety;* apprehension; tension — Sense of *serenity;* security; peace of mind
−6 −5 −4 −3 −2 −1 0 +1 +2 +3 +4 +5 +6

D *Difficulty* in medical management for all complaints — *Ease* in medical management for all complaints
−6 −5 −4 −3 −2 −1 0 +1 +2 +3 +4 +5 +6

E *Fear of death* — *Calm* acceptance of *death*
−6 −5 −4 −3 −2 −1 0 +1 +2 +3 +4 +5 +6

F *Preoccupation* with pain and physical suffering — *Tolerance* of pain and physical suffering
−6 −5 −4 −3 −2 −1 0 +1 +3 +3 +4 +5 +6

Fig. 1. Rating sheet for emotional condition of patients.

to him by various raters on the 13-point rating scale, and by the consumption of narcotics. The computations of the ratings were done separately for all the individual subscales and also for representatives of each of the six categories of raters.

In addition, a global index was obtained for each of the categories of distress by pooling the ratings of all the raters; the therapeutic improvement was assessed by comparing the global indexes from pre- to posttreatment. For gross assessment of the degree of the patient's improvement, one global index of the clinical condition was developed for each patient by collapsing the data from all individual raters for all the clinical categories measured.

Results

Pre- to Posttreatment Differences

Ratings of the emotional and physical conditions of the patients. The clinical impressions of the often dramatic effects of psychedelic therapy on the emotional condition of the cancer patients were supported by the results of ratings. Table IV shows the differences between mean scores of ratings reflecting the clinical conditions of the patients before and after psychedelic therapy. The computations were made separately for various categories of raters. As the table indicates, all the mean differences had a positive direction. Out of a total of 36 differences of mean scores, only 6 did not show statistical significance, or a definite positive trend. Many of the differences were significant at the 0.001 level.

In evaluating the data, it is necessary to take into consideration that this research had the form of pilot experimentation; there was no concomitant control group, and different combinations of raters were tried in the course of the study. Different numbers of raters and changes in their constellations during various stages of research account for the differences between the numbers in individual categories of emotional distress and those of raters. For the above reasons, the statistical results should be considered as illustrations or indications of the therapeutic efficacy of psychedelic treatment with terminal cancer patients, rather than as conclusive statistical proof.

Table V shows the differences between mean global indexes for separate categories of emotional and physical distress of the patients. These indexes were obtained by pooling the ratings from all raters who evaluated the patients. As indicated by the table, all the differences were significant at the 0.001 level.

Table VI shows the difference between the means of the pre- and posttreatment global indexes. These indexes were obtained by pooling the ratings from all raters relative to each of the patients and then collapsing the data also over the individual categories of distress. This procedure makes it possible to express the emotional condition of the patients by a single number. The differences between the pre- and posttreatment global indexes can be used as a gross indicator of the overall improvement of the patients.

The use of the global index makes it possible to estimate the percentage of

Table IV. Differences of mean scores of ratings reflecting the emotional and physical condition of patients before and after psychedelic therapy

Rater	n	Mean rating scores		Mean difference	t-Score	p
		pre	post			
Depression						
Therapist	31	−3.42	+ 1.06	4.48	10.69	0.001
Cotherapist	20	−3.40	+ 1.20	4.60	7.72	0.001
Physician	28	−3.57	+ 0.39	3.96	6.60	0.001
Nurse	27	−1.78	+ 0.56	1.22	1.70	n.s.
Family member	26	−2.88	+ 0.50	3.38	4.50	0.001
Independent rater	7	−3.43	−0.86	2.57	2.52	0.05
Anxiety						
Therapist	31	−3.52	+ 1.16	4.68	9.19	0.001
Cotherapist	20	−3.50	−0.05	3.45	5.92	0.001
Physician	28	−3.29	+ 0.25	3.54	5.86	0.001
Nurse	27	−2.59	−0.37	2.22	2.99	0.01
Family member	26	−1.85	+ 0.85	2.69	3.27	0.01
Independent rater	7	−3.43	−1.29	2.14	1.95	0.10
Pain						
Therapist	31	−1.52	+ 1.42	2.94	3.89	0.001
Cotherapist	19	−2.84	+ 1.21	4.05	5.31	0.001
Physician	27	−3.52	+ 1.07	4.59	6.14	0.001
Nurse	27	−1.67	+ 0.85	2.52	3.93	0.001
Family member	26	−1.65	+ 1.31	2.96	3.57	0.01
Independent rater	7	−3.14	+ 0.43	3.57	2.42	0.10
Fear of death						
Therapist	23	−2.70	+ 2.61	5.30	9.53	0.001
Cotherapist	16	−1.75	+ 0.81	2.56	2.82	0.02
Physician	18	−2.17	+ 0.22	2.39	3.06	0.01
Nurse	19	−3.42	+ 0.21	3.21	2.92	0.01
Family member	18	−0.06	+ 1.89	1.94	1.83	0.10
Independent rater	7	−2.71	−0.71	2.00	2.90	0.05
Isolation						
Therapist	31	−0.55	+ 2.52	3.06	7.74	0.001
Cotherapist	20	−1.30	+ 2.60	3.90	6.43	0.001
Physician	28	−0.21	+ 1.61	1.82	2.49	0.02
Nurse	27	−0.15	+ 0.85	1.00	2.01	0.10
Family member	26	+ 0.65	+ 2.96	2.31	3.13	0.01
Independent rater	7	−2.29	+ 1.14	3.43	3.53	0.02
Management						
Therapist	31	−0.19	+ 1.71	1.90	3.53	0.01
Cotherapist	20	−0.15	+ 1.05	1.20	1.72	n.s.
Physician	28	−1.86	+ 1.43	3.29	4.32	0.001
Nurse	27	+ 0.07	+ 1.37	1.30	2.77	0.02
Family member	26	+ 0.23	+ 1.58	1.35	1.54	n.s.
Independent rater	7	+ 0.29	+ 3.14	2.86	3.87	0.01

Table V. Differences of mean global indexes reflecting the emotional and physical condition of terminal cancer patients before and after psychedelic therapy

	n	Mean global index		Mean difference	t-Score	p
		pre	post			
Depression	31	−3.05	+ 0.43	3.48	10.05	0.001
Anxiety	31	−2.94	+ 0.33	3.27	9.13	0.001
Pain	31	−2.21	+ 1.06	3.26	7.32	0.001
Fear of death	24	−2.22	+ 1.05	3.27	6.97	0.001
Isolation	31	−0.40	+ 1.92	2.32	6.95	0.001
Management	31	−0.50	+ 1.26	1.76	4.68	0.001

Table VI. Comparison of the global indexes reflecting the emotional and physical distress of terminal cancer patients before and after psychedelic therapy

n	Mean global index		Mean difference	t-Score	p
	pre	post			
31	−1.96	0.96	2.92	9.80	0.001

Table VII. Percentage of terminal cancer patients showing improvement after psychedelic therapy

9 dramatically improved (increase of the global index of 4 and more)	29.0
13 moderately improved (increase of the global index between 2 and 4)	41.9
7 unimproved (increase of the global index between 0 and 2)	22.6
2 worse (decrease of the global index between 0 and 1)	6.4

Table VIII. Differences of mean scores of the amount of narcotics consumed before and after psychedelic therapy, in equivalent units per day

	n	Mean narcotic dose		Mean difference	t-Score	p
		pre	post			
Psychedelic therapy group	31	2.58	2.24	0.35	1.10	n.s.

therapeutic success. 'Dramatic improvement' can be arbitrarily defined as increase of the global index of 4 and more points, and 'moderate improvement' as a gain between 2 and 4 points; the patients who show an increase of less than 2 points can be considered as 'essentially unchanged'. As indicated by table VII, according to this definition 9 patients (29 %) showed dramatic improvement following psychedelic therapy; 13 patients (41.9 %) were moderately improved and 7 patients (22.6 %) unchanged. Only 2 patients (6.4 %) had a lower global index in the posttreatment period. It is necessary to emphasize that this decrease was negligible (−0.21 and −0.51 points, respectively); since cancer is a progressive disease, a decrement should be actually expected between any two ratings of untreated patients.

Consumption of narcotic drugs. Table VIII shows the difference between the consumption of narcotics per day from pre- to posttreatment. Although a very definite positive trend is indicated, the difference is not statistically significant. The possible reasons for this finding that seems to be in conflict with the above data showing a highly significant decrease of pain seen by various categories of raters, will be analyzed later in discussion.

Psychedelic Experiences of Terminal Cancer Patients

The experiences of the cancer patients following the administration of LSD (or DPT) did not appear to be essentially different from those that were observed in our previous studies with alcoholics, neurotics and narcotic drug addicts. The phenomenology of the individual sessions covered a very wide range from aesthetic experiences of an abstract nature through reliving of traumatic or positive childhood memories to profound transcendental experiences of a mystical and religious nature. It has been our impression that most dramatic therapeutic changes followed sessions in which the patient achieved an intense psychedelic peak experience – an experience of unity, usually preceded by agony and death and followed by spiritual rebirth. Profound experiences of this kind were observed in approximately 25 % of the psychedelic sessions of the cancer patients.

The most important difference between the sessions of terminal cancer patients and those of psychiatric patients was a considerably higher incidence of difficult physical symptoms. Various psychosomatic problems (such as occasional headaches, tremors, nausea, palpitations, breathing difficulties, etc.) are common in therapeutic sessions with psychedelic drugs; they occur usually earlier in the sessions and seem to be related to the emerging traumatic unconscious material and the patient's inability to let go of his usual resistances and defenses. In addition to these, in the sessions with the cancer patients, there were occasionally physical problems and problems with management related to the patient's basic disease, rather than psychodynamics (such as incontinence of

urine and feces in the patients with pelvic tumors or metastases in the spinal cord, vomiting in the patients with gastric cancer or intestinal obstructions, etc.). In a much larger percentage than it is in the case of physically healthy persons, the long-lasting LSD sessions appeared to be rather fatiguing. Many of the patients felt tired not only in the evening after the session, but even during the following day. As mentioned above, this was one of the reasons why an attempt was made to replace LSD in our treatment program by a shorter-acting compound with similar effects as LSD, namely DPT.

Discussion

The dramatic changes of the clinical condition observed in many cancer patients following psychedelic therapy covered a very wide range from improvement of various parameters of emotional distress (such as depression, anxiety, tension, insomnia, and restricted social communication), through relief of pain to changes in the attitude toward impending and inevitable death. This clinical observation raises a variety of rather important practical and theoretical questions. Within the scope of this presentation they can be only briefly outlined.

The first interesting problem to consider is to what extent the therapeutic results can be attributed to the pharmacological effects of LSD or DPT *per se,* and what is the contribution of psychotherapy that precedes, accompanies and follows the drug administration. This question cannot be answered without an extensive controlled study. Although *Kast* (3–6) in his research obtained positive results with a predominantly chemotherapeutic approach, there exists ample evidence that the combination of psychedelics with psychotherapy maximizes the benefits and minimizes the risks of this procedure.

Another interesting question is that of the effective mechanisms responsible for the therapeutic changes observed. The positive results were least surprising in the area of emotional symptoms, such as depression, tension, anxiety, psychological withdrawal and insomnia. Similar effects were rather consistent in our previous studies in psychiatric patients. It seems that LSD psychotherapy involves a favorable combination of a number of mechanisms operating in conventional psychotherapy, such as reliving of traumatic childhood memories, abreaction and catharsis, facilitation of emotional and intellectual insights, intensification of the transference relationship, etc. The most dramatic therapeutic results have been, however, observed in association with the psychedelic peak experience that appears to be a new and rather powerful mechanism responsible for profound personality changes.

The often surprising effect of LSD or DPT on severe physical pain is not easy to explain. These substances certainly cannot be considered simply as analgesics; their effect is not sufficiently consistent and predictable, and there is no

clear dose-effect relationship. The relief of pain is often observed for a period of weeks to months following the administration of the drug. There appears to be a rather definite psychological component in this analgesic effect. Some of the possible explanations involve increased pain tolerance; defocusing of attention from the pain stimulation and broadening of the field of awareness; and enhanced 'here and now' orientation that attenuates the past and future component involved in the experience of pain (oversensitization due to memories of past pains and to anticipation of pain in the future). It is interesting to mention in this connection the previously cited discrepancy in our findings, namely, the fact that the ratings indicated a statistically significant decrease in pain, whereas the consumption of narcotics did not show significant reduction. At least three factors should be taken into consideration in evaluating this situation. First, most of the cancer patients used, in addition to narcotics, a variety of other psychoactive substances, such as major or minor tranquillizers, non-narcotic analgesics and hypnotics. The changes in consumption of these drugs were not systematically measured in our study. This is especially important in the case of phenothiazine tranquillizers that were routinely discontinued 5 days before the drug session. Second, in many patients even heavy narcotic medication did not successfully control pain before the psychedelic session. Some of these patients found the same amount of narcotics more effective after treatment. Third, it is quite plausible that this apparent discrepancy reflects also the element of habituation or even physiological addiction due to prolonged administration of narcotics.

Probably the most surprising of the findings were the changes in the attitude toward death and in the concept of death itself. Increased acceptance of death usually followed sessions in which the patients reported deep religious and mystical experiences, whereas improvement of the emotional condition of the patients and relief of pain was frequently observed even after sessions with predominantly psychodynamic content.

In conclusion, it should be emphasized that psychedelic therapy as practiced by the Maryland Psychiatric Research Center group is a procedure that requires special training and experience of the therapist. Under these circumstances, it appears to be a safe and effective treatment method that could in the future represent an important contribution to the management of terminal patients.

Acknowledgements

It is with a great deal of appreciation and gratitude that the following acknowledgements are made:

First, to the members of the research staff, particularly to Dr. *Charles Savage,* for invaluable support and advice he has granted over the years; Mrs. *Helen Bonny* for her help

in this program as music therapist and research assistant, and Mrs. *Nancy Jewell* and Mrs. *Ilse Richards* for their dedicated and sensitive participation as nurses and cotherapists.

Second, to the surgical staff of the Sinai Hospital in Baltimore, Maryland, for their understanding, cooperation and willingness to provide their resources for this highly sensitive experimental venture.

Third, to the agencies providing the necessary funding to support this research endeavor, namely the State of Maryland through the Department of Health and Mental Hygiene and the National Institute of Health, through PHS All-Purpose grant FR-05546. Special debts are acknowledged to the Mary Reynolds Babcock Foundation, Inc., whose financial support at a most critical time allowed these activities to be expanded in depth.

References

1 *Cohen, S.:* LSD and the anguish of dying. Harpers Mag. *231:* 69 (1965).
2 *Feifel, H.* (ed.): The meaning of death (McGraw-Hill, New York 1959).
3 *Kast, E.C.:* The analgesic action of lysergic acid compared with dihydromorphinone and meperidine. Bull. Drug Addiction Narcotics, App. 27, p. 3517 (1963).
4 *Kast, E.C.:* Pain and LSD-25. A theory of attenuation of anticipation; in *Solomon* LSD: the consciousness expanding drug (Putnam, New York 1964).
5 *Kast, E.C.:* LSD and the dying patient. Chicago med. Sch. Quart. *26:* 80 (1966).
6 *Kast, E.C. and Collins, V.J.:* A study of lysergic acid diethylamide as an analgesic agent. Anesth. Analg. Curr. Res. *43:* 285 (1964).
7 *Kübler-Ross, E.:* On death and dying (Collier Macmillan, London 1969).
8 *Kurland, A.A.; Savage, C.; Pahnke, W.N.; Grof, S., and Olsson, J.E.:* LSD in the treatment of alcoholics. Pharmakopsychiat. Neuro-Psychopharm. *4:* 84 (1971).
9 *McCabe, O.L.:* An empirical investigation of the effects of chemically (LSD-25) induced 'psychedelic experiences' on selected measures of personality, and their implications for therapeutic counseling theory and practice; diss. Baltimore (1968).
10 *Pahnke, W.N. and Richards, W.A.:* Implications of LSD and experimental mysticism. J. Religion Hlth *5:* 176 (1966).
11 *Pahnke, W.N.; Kurland, A.A.; Unger, S.; Savage, C., and Grof, S.:* The experimental use of psychedelic (LSD) psychotherapy. J. amer. med. Ass. *212:* 1856 (1970).
12 *Savage, C.; McCabe, L., and Kurland, A.A.:* Psychedelic therapy of the narcotic addict; in *Brown and Savage* Drug abuse controversy (National Education Consultants, Baltimore, in press).
13 *Unger, S.; Kurland, A.A.; Shaffer, J.W.; Savage, C.; Wolf, S.; Leihy, R.; McCabe, O.L., and Shock, H.:* LSD-type drugs and psychedelic therapy. Res. Psychother. *3:* 521 (1968).
14 *Weisman, A.D.:* Appropriate death. Int. J. Psychiat. *2:* 190 (1966).
15 *Weisman, A.D.:* A psychiatrist's view. Death and responsibility. Psychiat. Opinion *3:* 22 (1966).
16 *Weisman, A.D.:* Denial as a factor in patients with heart disease and cancer. New York Acad. Sci. Conf. on Care of Patients with Fatal Illness, 1967.

Author's address: Dr. *A.A. Kurland,* Maryland Psychiatric Research Center, Box 3235, *Baltimore, MD 21228* (USA)