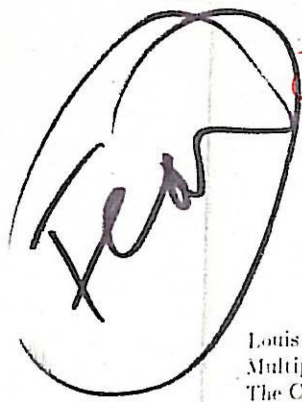


167

J. OF NERVOUS + MENTAL DISEASE



CONTENTS OF VOLUME 138

No. 1, JANUARY 1964

Louis Dublin: A Tribute..... 2

Multiple Determinants of Suicidal Efforts: Editorial. *Lawrence S. Kubie*..... 3

The Concept of Process-Reactive Schizophrenia: Criteria and Related Research. *Jerry Higgins*.
Einar Kringle..... 9

Discordance with Respect to Schizophrenia in Monozygotic Male Twins: Some Genetic Aspects.
Leonard Solomon and Martin Zlotowski..... 26

The Relationship between the Elgin and the Phillips Measures of Process-Reactive Schizophrenia.
Leonard P. Ullmann and Jeannette M. Giovannoni..... 32

The Development of a Self-Report Measure of the Process-Reactive Continuum. *Leonard P. Ullmann and Jeannette M. Giovannoni*..... 38

Role Perception: A Comparative Study of Good and Poor Pre-Morbid Schizophrenic Men. *Joy M. Neale Query*..... 43

An Historical Review of the Remitting Schizophrenias. *George E. Vaillant*..... 48

Abolish the Insanity Defense—Why Not? *Jay Katz and Joseph Goldstein*..... 57

The Lay Interviewer in Psychiatric Research. *Lee N. Robins and Niels W. Braroe*..... 70

The Mental Development of Ex-Premature Children With Retroental Fibroplasia. *Minna Marder Genn and William A. Silverman*..... 79

Birth Order and Schizophrenia. *Sharadamba Rao*..... 87

Brief Communication. *Irene S. Forrest and Fred M. Forrest*..... 90

Book Reviews..... 92

No. 2, FEBRUARY 1964

The Teleological Fallacy in Dynamic Psychology: Editorial. *Lawrence S. Kubie*..... 103

The Sources of Observer Variation and Bias in Clinical Judgments: I. The Item of Psychiatric History. *Hanus J. Grosz and K. Granville Grossman*..... 105

Dogmatism and the Medical Profession. *Eric H. Marcus*..... 114

Field Dependence and Sophistication of Body Concept in Schizophrenics. *A. Arthur Sugarman and Robert Cancro*..... 119

Suicide Rates among Current and Former Mental Institution Patients. *Abelardo Temoche, Thomas F. Pugh and Brian MacMahon*..... 124

Interaction of Motivational and Drug Effects in Animal Behavior Research. *W. T. Liberson*..... 131

Electroshock with and without Barbiturate Anesthesia: A Study of Patient Preference. *P. Kenneth Huggins, Myron G. Sandifer and William S. Pearson*..... 141

Electro-Clinical Correlates of Emotional Activation of the Electroencephalogram. *Joyce G. Small, Janice R. Stevens and Victor Milstein*..... 146

Mental Illness and Values in a College Population. *William G. Smith, Joseph T. English and Norris Hansell*..... 156

Plantar Warts: A Case Study. *Irvin D. Yalom*..... 163

Environmental Stimulus Reduction as a Technique to Effect the Reactivation of Crucial Repressed Memories. *Anthony Saraci*..... 172

"The VIP Syndrome": A Clinical Study in Hospital Psychiatry. *Walter Weintraub*..... 181

Book Reviews..... 194

No. 3, MARCH 1964

The Bearing of Psychoanalytic Theory on Selected Issues in Research on Marginal Stimuli. *Fred Pine*..... 205

A Second Look at Sensory Deprivation. *Eugene Ziskind*..... 223

Psychological Effects of Lateralized Basal Ganglia Lesions: A Factorial Study. *Manuel Riklan and Eric Levita*..... 233

Effect of Brain Damage on Adaptability. *Robert D. McDonald*..... 241

Ego Disturbance in TAT Stories as a Function of Aggression-Arousing Stimulus Properties. *Lloyd H. Silverman*..... 248

Implicit Personality Disorder in Patients with Toxic and Non-Toxic Goiter. *Joseph M. Lubart*..... 255

WILKINS CO.

R. S. AND LIBERSON, W. T. 1
reserpine on behavior fixation.
Comp. Physiol. Psychol., 53: 1

1. The investigation of the phar
f psychological processes: S
gic considerations from the p
clinical psychoanalysis. In Pen
d. *Psychopharmacology: Phar*
ffects on Behavior, pp. 302-
arper, New York, 1958.

W. T. Analysis of the effects
pic drugs on rigid behavior
resented at VA Annual Cooper
otherapy studies in Psychia
Research Approaches to Men
neinnati, Ohio, 1961.

V. T. Prolonged hypnotic sta
signs' induced in guinea pi
8: 40-41, 1948.

7. T., ELLEN, P. AND FELDMAN
t of somatic vs. 'guidance' the
avior rigidity in rats. *J. Neur*
1: 17-19, 1959.

8. T., ELLEN, P., SCHWARTZ, I
, KAFKA, A. AND GAGNON, V.
udies of the effects of psychotrop
he behavior of guinea pigs a
ropsychiat., 3: 298-303, 1962.

9. T., FELDMAN, R. S. AND ELLEN
viorial analysis of the effects
te as compared with other treat
and electroconvulsive shock
opharmacol., 1: 351-357, 195
10. T., KAFKA, A. AND SCHWARTZ, I
hlordiazepoxide (Librium) a
hopharmacological agents
avior in rats." *Biochem. Ph*
5-16, 1961.

11. T., KAFKA, A., SCHWARTZ, I
, V. Effects of chlordiazepox
n fixated behavior in rats. *E*
armacol., 2: 67-78, 1963.

12. T., SMITH, R. W. AND STERN,
udies of the prolonged hyp
awal in guinea pigs." *J. Neur*
28-34, 1961.

13. *The Study of Behavior With*
raw-Hill, New York, 1949.

ELECTROSHOCK WITH AND WITHOUT BARBITURATE ANESTHESIA: A STUDY OF PATIENT PREFERENCE

P. KENNETH HUGGINS, M.D.,¹ MYRON G. SANDIFER, M.D.² AND
WILLIAM S. PEARSON, M.D.³

The purpose of this paper is to report an investigation of one controversial aspect of electroshock therapy, namely the question of whether or not patients prefer barbiturate anesthesia prior to the electrical shock.

The literature reports divergent points of view. Advocates of pre-shock anesthesia state: "Scoline (succinylcholine) administration must always be preceded by unconsciousness produced by pentothal, as the feeling of progressive paralysis which would otherwise be felt is terrifying" (8). Again: "This anesthesia (Brevital) eliminates the awareness of the unpleasant side-effects of succinylcholine chloride, such as muscular fasciculations and feelings of suffocation" (9). On the other hand, Rose (7) states that apprehensions about causing anxiety to the patient with succinylcholine alone are "groundless" provided a proper technique is used. (Rose's technique will be described later.)

Two studies have been reported which attempted to study patients' attitudes toward different techniques. Barker and Horpe (1) studied patient preferences to the different techniques and found "... that a significantly larger proportion of our patients favoured ECT given with an anesthetic." While this conclusion cannot be regarded, a few criticisms may be directed against the method. Patients were asked to compare each treatment with the one before. If they could not remember the previous treatment, they were reminded with such words as a treatment "which put you to sleep" or "without an injection."

No tabulation was made of "no preference." Also, the patients who received muscular relaxant without prior anesthesia received suxethonium as the relaxant. It is now believed that succinylcholine is superior to suxethonium (6).

Havens (3) studied "fear of treatment" and "tension" in completely unmodified ECT compared with ECT modified with thiopentene and succinylcholine. He concluded that there were no differences. However, the measures of "tension" and "fear" are difficult to tabulate. In neither of the two aforementioned studies were the patients *unaware* of the techniques employed.

From the literature it is apparent that the techniques of using succinylcholine vary widely in at least two major respects: dosage of succinylcholine and the *waiting period* between the succinylcholine injection and the administration of the electric shock. Those who desire complete relaxation appear to favor large doses of succinylcholine (up to 50 mg.) and wait about 60 seconds between the injection and the shock. Others advocate smaller doses (15-30 mg.) and wait 20-30 seconds.

Two articles on technique are of particular importance. Buckman *et al.* (2) conducted a study in which the timing of the electrical current was spaced at intervals after the succinylcholine injection. Maximum relaxation occurred about 40 seconds after the succinylcholine injection. In this study, also, a system of grading the degree of muscular relaxation was developed. Because of its practical descriptive value this system was adopted for the present study and will be described subsequently under methodology.

¹Dorothea Dix Hospital, Raleigh, North Carolina.
²North Carolina Hospitals Board of Control, Raleigh.

Rose (7) has reported a technique used in 3000 treatments with 25 mg. (females) and 30 mg. (males) of succinyleholine without barbiturates. He emphasized the timing of the electroshock treatment. He asked the patient to raise his arm at a right angle and keep it there as long as possible. When the arm began to fall, the electroshock was given. This was "usually between 5-15 seconds" after the injection, occasionally prolonged to 30 seconds. Rose states that the disagreeable choking sensation appears after the relaxation of the arm, and is therefore not a problem with his technique.

The present hypothesis was that patients would prefer ECT with barbiturate anesthesia to ECT without barbiturate anesthesia. The rationale for using an intravenous barbiturate before ECT is that the patient's apprehension at the time of treatment and his subsequent painful memories can be reduced. Kalinowsky and Hoch (8) clearly state that the addition of an anesthetic increases the immediate risk. Some clinicians are not impressed by the differences in the patient's reaction to ECT with and without barbiturates and prefer to use succinyleholine alone. Others feel that an anesthetic is indicated for all ECT, and its use should be "standardized" as part of the ECT much the same as succinyleholine has been accepted as a routine part of the ECT. The literature reviewed indicates that the problems of technique and patient comfort are controversial, and a documented study of the type proposed has not been reported.

METHOD

Selection of patients: Patients selected for the project were hospitalized mental patients who 1) clinically required ECT, 2) were felt to be able to communicate adequately their reactions to treatment, 3) had no physical contraindications for ECT or barbiturate anesthesia. This group included ten males and eight females whose ages ranged from 19 to 54 years, with varied

diagnoses but all having depression as part of the clinical picture.

A "non-project" group of twelve patients which met the above criteria was also selected, but these patients had poor veins or entered the hospital after the project was under way. Patients for the entire study were taken consecutively and no selection was made except for the above criteria.

Procedure: All patients were given ECT by their own ward physicians. Some received treatment twice weekly with one day between treatments, others received treatment three times weekly with one day between each treatment. The "project" patients received treatments in pairs. One treatment in the pair was given with a barbiturate, methohexital sodium (Brevital), and the other treatment without a barbiturate. The two types of treatment were rotated randomly in succeeding pairs. All patients received atropine gr. $\frac{1}{100}$ 30 minutes prior to either type of treatment. Administration was as follows:

1) ECT with barbiturate: A syringe (10 cc.) containing 100 mg. of methohexital was fitted with a three-way stopcock. The needle was introduced into the ante-cubital vein and the barbiturate injected slowly until the patient was unconscious, as judged by his unresponsiveness to questioning. This state was produced with 60-100 mg. (average 75 mg.) of Brevital. A syringe containing 20 mg. of succinyleholine chloride (Sucostrin) was then attached to the stopcock and the entire 20 mg. was rapidly injected. After 30 seconds an electroshock was applied bitemporally using a Medcraft machine with Glissando technique and a voltage of 140 at 0.5 seconds. (This voltage and time were selected as standard since they were felt to be above the seizure threshold of any patient. It was not necessary to alter the voltage or time for any patient during the study.) During the course of each seizure the degree of relaxation was evaluated by a method proposed by Buckman *et al.* (7).

0 — No relaxation
 + — Forearm considered to undulate
 ++ — Forearm little bent
 +++ — Forearm soft
 ++++ — Convulsive

Respiration was given when required.

2) ECT without barbiturate: Same as above except that the 10 cc. of normal saline

The "project" patients alternately on these two methods in any given pair. All patients necessarily receive the same sequence.

The "non-project" patients also received the same technique. They received no barbiturate, only succinyleholine, and were not aware that different techniques were being used for alternate treatments.

The project patients were not aware that different techniques were being used for alternate treatments. They were not directly reported about the project did not know which patient received which technique.

The data were collected for males and one female. Interviewers had no knowledge of which patient received which technique except for brief interviews with the patient pair to ascertain their preference. They were not aware of which patient received which technique. The data were collected for males and one female. Interviewers had no knowledge of which patient received which technique except for brief interviews with the patient pair to ascertain their preference. They were not aware of which patient received which technique. The data were collected for males and one female. Interviewers had no knowledge of which patient received which technique except for brief interviews with the patient pair to ascertain their preference. They were not aware of which patient received which technique.

ses but all having depression as of the clinical picture. "non-project" group of twelve patients met the above criteria was admitted, but these patients had poor venous access and were discharged from the hospital after the project was over. Patients for the entire study were taken consecutively and no selection criteria except for the above criteria.

Procedure: All patients were given ECT on their own ward physicians. Some patients received treatment twice weekly with one day between treatments, others received treatment three times weekly with one day between each treatment. The "project" patients received treatments in pairs. One patient in the pair was given with alternate, methohexital sodium (Brevital) and other treatment without a barbiturate. The two types of treatment were administered randomly in succeeding pairs. All patients received atropine gr. 1/100 prior to either type of treatment. The sequence of treatment was as follows:

ECT with barbiturate: A syringe containing 100 mg. of methohexital with a three-way stopcock. The needle introduced into the ante-cubital vein. Barbiturate injected slowly until the patient was unconscious, as judged by his unresponsiveness to questioning. This started with 60-100 mg. (average of Brevital). A syringe containing succinylcholine chloride (Succinyl) attached to the stopcock and 10 mg. was rapidly injected. After an electroshock was applied by using a Medcraft machine with the technique and a voltage of 100-150 volts. (This voltage and time were standard since they were felt to be above the seizure threshold of any patient. It was not necessary to alter the time for any patient during the course of each seizure. The degree of relaxation was evaluated by the method proposed by Buckman et al. (7).

- 0 — No relaxation
- + — Forearms flexed on arms, considerable force required to unbend the forearms
- ++ — Forearms flexed on arms, little force required to unbend the forearms
- +++ — Forearms not flexed; a very soft convulsion present
- ++++ — Convulsion barely noticeable.

Respiration was given by positive-pressure respiration when required.

2) ECT without barbiturate: Same as above except that the first syringe contained 10 cc. of normal saline.

The "project" patients were started alternately on these two methods. Although each patient received treatment by both methods in any given pair, he did not necessarily receive the barbiturate and saline in the same sequence for each successive pair.

The "non-project" or control group of patients also received treatments in "pairs." The same technique was utilized except they received no barbiturate or saline, but only succinylcholine, 20 mg., for each treatment.

The project patients were apparently not aware that different techniques were being used for alternate treatments. This was not directly reported, and "ward gossip" about the project did not develop.

The data were collected by two clinicians, one for males and one for females. The interviewers had no contact with patients except for brief interviews after each treatment pair to ascertain each patient's preference. They were "blind," i.e., did not know which patients were "project" or "non-project" patients, and had no knowledge of which technique was used in a given treatment. With each patient the interviewer introduced himself and indicated that he was conducting a survey concerning the patient's preference and reactions to ECT. He further stated that he knew that the

patient had had two treatments within the past several days which had been administered by his ward physician; the patient's preference for either treatment, if any, was assessed. No patient indicated that he felt that different techniques (in terms of medication received) accounted for his preference. All patients were interviewed on the day following the last treatment of the pair since it was felt that memory impairment was minimal at this time.

RESULTS

Of the 47 treatment pairs administered to the 18 "project" patients there was "no preference" in 24 pairs (51 per cent), preference for barbiturate in 19 pairs (40 per cent) and preference for succinylcholine alone in four pairs (8.5 per cent). Of the 24 pairs administered to 12 "non-project" patients, no preference was reported in 16 (67 per cent). In eight pairs (33 per cent), however, there was a stated preference for one treatment over the other even though the treatments were identical. (See Figure 1.)

DISCUSSION

The most striking finding is that in half the pairs when electroshock was administered with and without barbiturates "no preference" was expressed. The findings in the control group suggest that, in these circumstances, patients tend to express some preference about one-third of the time even when there is no difference. When preferences are expressed, they are in favor of barbiturates over succinylcholine alone, although these preferences are mild.

There appear to be at least three explanations of the present finding that the patients' preference for barbiturate-anesthesia ECT is a mild one.

First, the dose of succinylcholine might not be sufficient to induce respiratory paralysis. This dose of succinylcholine, however, was sufficient to produce a satisfactory degree of general muscular relaxation. Util-

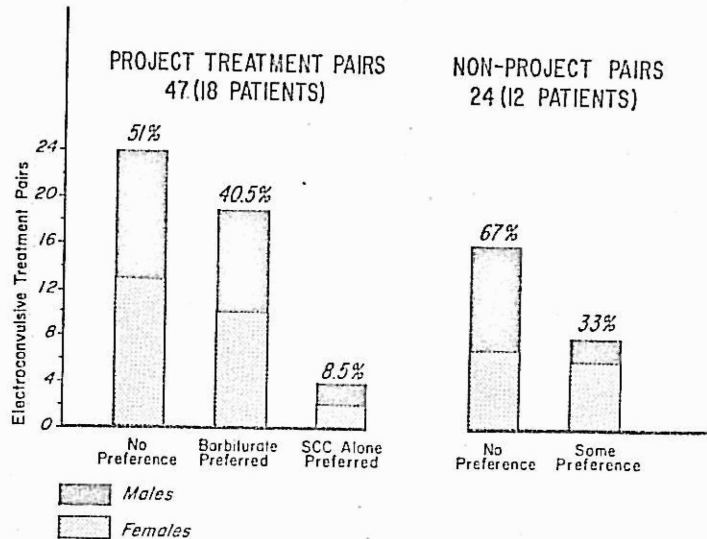


FIG. 1. Preferences of project treatment and non-project pairs of subjects.

lizing the scoring method of Buckman *et al.*, the modal relaxation for males was found to be ++ and for females +++.

Second, there is always the possibility of interviewer bias in assessing the patient preferences. Some protection against this source of error was afforded by having the interviewers "blind" and by their knowing that all patients interviewed were not project patients. The results obtained by the two interviewers are sufficiently similar to lend confidence to results.

A third possibility comes from the fact that the electroshock itself usually causes sufficient retrograde amnesia to obliterate memory of the brief unpleasant sensations of the respiratory paralysis. When the patients were interviewed the day after electroshock they displayed no gross memory defects, but it is here proposed that it is the amnesia for events immediately surrounding the electroshock which minimizes the stated preference for the barbiturate method.

The data have been examined to see if such common variables as age, sex and diagnosis might be related to preference for barbiturate anesthesia. These findings were negative, as was the supposition that a patient's choice in the first pair would

influence choice on subsequent pairs. "Individuality" however does play a role. Some of the patients account for 15 of the stated preferences for barbiturate anesthesia. The other twelve patients had an equal opportunity to contribute to "barbiturate preference" but did so only four times. It would be intriguing and important to determine what distinguishes these patients, but that aspect is not discernible in this study. The present findings have been interpreted to mean that physicians should not feel under obligation to use pre-shock barbiturates as a routine procedure, but rather on an individual basis. Further data on this question are now being gathered using another method, namely the assessment of pre-shock anxiety in a series of treatments with and without barbiturate anesthesia.

SUMMARY

Eighteen patients on electro-convulsive treatment who received treatment with and without barbiturates were evaluated with regard to their "preference" using a double-blind technique and a control group. Over half the time the patients had no preference for one technique over the other. If a

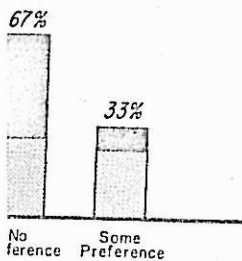
ference was expressed for barbiturates. It is noted that patients would prefer barbiturate treatment.

REFERENCE

- BERRER, J. C. AND
 Journal of electrople
 Ment. Sci., 106: 13
 BERKMAN, C., KRE
 PASTATO, A. S. A
 inadequate relax
 succinylcholine a
 shock therapy. Ar
 145, 1960.

HAVENS, L. L. A cor

11-PROJECT PAIRS
24 (12 PATIENTS)



11-project pairs of subjects.

choice on subsequent pairs. "Preference" however does play a role. Six patients account for 15 of the 24 preferences for barbiturate and the other twelve patients had the opportunity to contribute to "barbiturate preference" but did so only for 4. It would be intriguing and important to determine what distinguishes these patients but that aspect is not discernible. The present findings have been interpreted to mean that physicians should be under obligation to use pre-shock barbiturates as a routine procedure, but on an individual basis. Further data and questions are now being gathered by the author's method, namely the assessment of anxiety in a series of treatment sessions without barbiturate anesthesia.

SUMMARY

Patients on electro-convulsive therapy who received treatment with barbiturates were evaluated for their "preference" using a double-blind technique and a control group. Of the 24 patients had no preference for either technique over the other. If

preference was expressed, it was mildly in favor of barbiturates. The original hypothesis that patients would universally prefer the barbiturate treatments was not substantiated.

REFERENCES

- BURKER, J. C. AND THORPE, J. C. An evaluation of electroplexy (ECT) techniques. *J. Ment. Sci.*, 106: 1347-1360, 1960.
- BOOKMAN, C., KRELL, A., PINSLEY, I., IMPASTATO, A. S. AND IMPASTATO, D. J. The "adequate relaxation interim" following succinylcholine administration in electroshock therapy. *Amer. J. Psychiat.*, 117: 342-345, 1960.
- HAVENS, L. L. A comparative study of modified and unmodified electric shock treatment. *Dis. Nerv. Syst.*, 19: 29-34, 1958.
- KALINOWSKY, L. B. AND HOCH, P. H. *Somatic Treatments in Psychiatry*, pp. 147-148. Grune & Stratton, New York, 1961.
- KARLINER, W. AND PADULA, L. J. The use of a new ultra-short-acting intravenous anesthetic in shock therapy. *Amer. J. Psychiat.*, 117: 355-356, 1960.
- KELEHER, J. AND WHITLEY, R. W. Modified electroconvulsive therapy without anesthesia. *Lancet*, 2: 589, 1955.
- ROSE, H. R. A standardized technique for modified electroshock therapy using succinylcholine chloride. *Amer. J. Psychiat.*, 116: 330-333, 1959.
- SARGANT, W. AND SLATER, E. *Physical Methods of Treatment in Psychiatry*, p. 112. Livingstone, Edinburgh, 1956.