PHYSICAL TREATMENT FOR SCHIZOPHRENIA

By

A. A. BAKER, M.D., D.P.M.
Deputy Physician Superintendent

J. A. GAME
Research Psychiatric Social Worker

and

J. G. THORPE, Ph.D.
Research Psychologist
Banstead Hospital, Sutton, Surrey

Introduction and Problem

In spite of the enthusiasm with which schizophrenic patients have been treated by physical methods over the past twenty years, there is surprisingly little evidence enabling us to compare the results of one physical treatment with another, or the physical treatments themselves with the treatments they replaced. Some writers (Polonio and Slater, 1954; Rees, 1949) point out a significant improvement over the spontaneous recovery rate with the use of insulin, while others (Jensen, 1952) find no such improvement. Bourne (1953) and Notkin *et al.* (1939) go so far as to claim that any improvements of insulin-treated patients are due to the extra care and attention they receive, and the work of Ackner and his colleagues (1957) may support this conclusion. Linford Rees (1949) comparing electrical treatment with insulin concluded that electro-shock therapy was far less effective than deep insulin therapy in the treatment of schizophrenia—a conclusion in line with that of Finiefs (1948). On the other hand Impastato and Almansi found very little difference between E.C.T. and insulin treatment in this respect.

Earlier this year, the present writers enquired of sixty teaching and mental hospitals in this country in order to determine which was the preferred treatment for schizophrenia. Many were unable to give answers, and there was little agreement between those who did. The majority of the teaching hospitals expressed a preference for insulin, while the mental hospitals in the main preferred E.C.T., but even so the numbers of convulsions or comas varied considerably from one hospital to another so that strict comparisons were impossible.

There are many reasons for these disagreements, but perhaps the most important of all is the lack of scientific rigour which has accompanied many researches. There have been very few studies in which two or more methods of treatment have been compared within the same hospital at the same time, and to quote Kalinowski and Hoch (1952) "as long as a comparative study of the various methods based on adequately treated material from the same hospital is not available, many questions will remain unanswered". Secondly, if two or more methods of treatment are being compared, it is essential that the treatment a patient is to receive is determined by a random selection or matching procedure, and not by the clinical judgment of the doctor in charge of the case.

https://doi.org/10.1192/bjp.104.436.860 Published online by Cambridge University Press

The study we are now reporting is an attempt to compare the relative efficiencies of electro-convulsive, insulin coma, and Largactil therapies given to schizophrenic patients.

METHOD

(a) *Patients*

All female schizophrenic patients between 18 and 40 years of age, admitted to Banstead Hospital since January, 1956, have been included in the scheme if a team of three doctors including two consultants have been able to agree over the diagnosis of schizophrenia, and if the patient has not had previous physical treatment for that condition. As a result of this, most of our patients were either severely ill, or had a long history of illness. None had a good prognosis on all three of the common criteria—good previous personality; recent onset and retained affect. All these patients are treated on the same ward by the same doctors and nurses.

(b) *Treatments*

Three treatments have been compared. The first is a course of 20 electric convulsions given at the rate of three a week (Monday, Wednesday and Friday) for the first twelve treatments, followed by two a week (Monday and Friday) up to the eighteenth treatment, followed by one a week (Wednesday) up to twenty. The treatments are administered with a standard "Ectron" machine and the "Ectonus technique" is employed (Russell, Page and Jillett, 1953). Second is a course of 30 insulin comas given at a maximum rate of 1 coma daily for six days a week. The coma, during which the patient does not react purposefully to painful stimuli, is terminated by nasal feed after 20 minutes. Thirdly, an eight weeks' course of Largactil is given at the rate of 100 mg. three times daily. On all days except Sunday, the first 100 mg. are given intramuscularly and the second and third doses orally. All patients receive 6 grains of sodium amytal on their treatment days, the E.C.T. group some 60 minutes before the convulsions, the insulin group 45 minutes before the insulin injections, and the Largactil group 30 minutes after the Largactil injection. The Largactil patients are awakened 2½ hours after taking the amytal. The E.C.T. and insulin patients are also given 1/100 grains of subcutaneous atropine before the convulsion or coma respectively.

Clinical experience has shown that these three treatments can all produce a satisfactory remission of symptoms.

(c) *Allocation of Treatments*

Patients are allocated to one of these three treatment groups by a random selection procedure. This means that once a patient has been included in the scheme, no doctor has any say whatever in determining which treatment the patient will receive. In the event of irreversible comas, skin reactions, or other untoward effects, where to continue that particular treatment was unwise on clinical grounds, the patient has been taken out of the scheme and a more suitable treatment administered.

(d) *Testing Procedure*

Once it has been decided that a patient is in the scheme, she undergoes a battery of psychological tests immediately preceding treatment and is re-assessed one week after completion of treatment. These results will be reported

https://doi.org/10.1192/bjp.104.436.860 Published online by Cambridge University Press

in a separate paper. The patient is also assessed before and after treatment on the Wittenborn rating scale (Wittenborn and Lesser, 1951), which provides ratings for psychiatric symptoms. Measures of physique, weight, and the Funkenstein Test are also recorded both before and after treatment.

(e) *Discharge*

When patients are interviewed one week after completion of treatment, the decision is made whether they can be discharged immediately, or whether further treatment or observation is needed. Patients are discharged if they are free from gross symptoms and are able to make reasonable plans for the future. The presence of personality defect, lack of insight, or affective flattening is not considered a bar to discharge. Those of our patients who are discharged would normally be considered to be recovered or much improved. Patients in whose case the treatment is considered to have failed are next given that treatment considered to be most suitable on ordinary clinical grounds.

(f) *Follow-up*

Our research psychiatric social worker follows all our patients after discharge. A patient is considered to have relapsed if she is re-admitted to hospital or if she seeks further medical help for the treatment of her symptoms.

RESULTS

Firstly, we must consider whether the groups formed in the above manner are comparable in the more important details. At the time of writing 18 patients have been allocated to the E.C.T. group, 15 to the insulin group and 15 to the Largactil group. The following Table (Table I) shows the duration of illness for those patients who completed their course of treatment, where the onset of illness is defined as the point at which overt psychotic symptoms such as hallucinations or delusions first appeared.

TABLE I

Duration of Illness

	Insulin	E.C.T.	Largactil
Less than 1 year	8	9	11
1–2 years	3	1	0
More than 2 years	1	7	3

For those patients who were discharged one week after completion of treatment, we have assessed the social environment to which they returned (Table II).

TABLE II

Social Environment After Discharge

	Insulin	E.C.T.	Largactil
Good environment	4	4	5
Medium environment	3	4	4
Bad environment	2	5	2

The more important mean scores for symptom clusters from the Wittenborn Rating Scales are given in Table III for the three groups on admission.

https://doi.org/10.1192/bjp.104.436.860 Published online by Cambridge University Press

TABLE III

Wittenborn Scores Before Treatment

	Insulin	E.C.T.	Largactil
Paranoid schizophrenia	6·16	7·40	7·85
Schizophrenic excitement	3·91	5·30	4·50
Hebephrenic schizophrenia	2·17	4·35	3·07
Depression	4·66	5·50	4·14
Anxiety	2·75	3·53	3·65

With regard to the length of stay in hospital, the E.C.T. and Largactil groups have an average stay of just under ten weeks and the insulin group of twelve weeks.

From these figures, the Largactil group would appear to have the best prognosis in view of the greater proportion of cases whose illnesses are of less than one year's duration, and also of a slightly higher proportion of good home environments to which they were discharged. The E.C.T. group having the smallest proportion of cases of less than one year's duration, and the smallest proportion of good home environments, would appear to have the worst prognosis.

The immediate results of treatment and relapse rates are given in Table IV.

TABLE IV

Results of Treatment and Relapse Rate

	Insulin	E.C.T.	Largactil
Completed course	12	17	14
Further treatment required	3 (25%)	4 (23%)	3 (21%)
Discharged following treatment ..	9	13	11
Relapsed	5 (55%)	4 (31%)	10 (91%)

We can see from this Table that the number of cases in which the treatments were considered to have failed is about the same for all three groups and none of the differences here is significant. The same result can also be seen in the mean Wittenborn Scores following treatment. These scores are given in Table V.

TABLE V

Wittenborn Scores After Treatment

	Insulin	E.C.T.	Largactil
Paranoid schizophrenia	2·50	2·47	3·20
Schizophrenic excitement	1·92	2·06	2·00
Hebephrenic schizophrenia	1·75	1·82	1·64
Depression	2·50	2·52	2·86
Anxiety	2·08	1·47	2·14

In no case is there a statistically significant difference between the groups on any of these symptom clusters; though on all clusters all groups show improvements which are significant at beyond the 5 per cent. level when compared with the symptom scores before treatment seen in Table III. This finding fits in well with the marked clinical improvement seen in most patients following treatment irrespective of which treatment they have had.

The statistical significance of the differences between the relapse rates shown in Table IV are as follows:

Between Insulin and E.C.T. : Not significant ($\cdot 3 > p > \cdot 2$)
Between Insulin and Largactil : Significant ($p = \cdot 05$)
Between E.C.T. and Largactil : Significant ($\cdot 05 > p > \cdot 01$)

https://doi.org/10.1192/bjp.104.436.860 Published online by Cambridge University Press

Thus the relapse rate for the Largactil group is significantly higher than for the other two groups in spite of the fact that it was favourably placed in respect of prognostic factors initially. What is also important is that the E.C.T. group have done slightly better than the insulin group in spite of the poorer initial prognosis, though the difference between them does not reach statistical significance.

In this study as in many others, there is striking evidence of the importance of early treatment for this type of patient. For the combined E.C.T. and insulin groups, 60 per cent. of those patients in whom overt psychotic symptoms such as hallucinations or delusions had appeared within one year preceding treatment have been successfully treated and have not returned to hospital, nor are they showing any signs of relapse. For those patients whose illness could be dated back beyond one year, only 40 per cent. are so situated.

Conclusions

The present study, in spite of the small number of patients with which it is so far concerned, has already provided sufficient evidence against the use of Largactil in the manner described, to compel us to change the treatment policy for this group of patients.

At present, the evidence on the relative efficiencies of E.C.T. and insulin points conclusively in neither direction though there is some evidence slightly in favour of E.C.T. The study will probably have to continue for some years before any definitive conclusions can be reached with regard to these two treatments.

Summary

By a random selection procedure, schizophrenic female patients were divided into three groups and treated by E.C.T., Insulin and Largactil respectively. Preliminary results indicate that there are no significant differences between treatments immediately following treatment, all groups showing significant improvement. The relapse rate for the Largactil group, however, is significantly higher than the relapse rate for the E.C.T., or for the Insulin groups. No significant difference has yet emerged between the E.C.T. and Insulin treatments.

Acknowledgments

The help of Drs. E. Caldwell and E. D. Myers, who have done so much of the work on the ward, is gratefully acknowledged. Thanks are also due to the South-West Metropolitan Regional Board for their research grants, and to Dr. E. P. H. Charlton, Physician Superintendent, Banstead Hospital, for permission to publish these results.

References

1. Ackner, B., Harris, A., and Oldham, A. J., *Lancet*, 1957, *i*, 607.
2. Bourne, H., *Lancet*, 1953, **265**, 964.
3. Finiefs, L. A., *J. Ment. Sci.*, 1948, **94**, 575.
4. Impastato, D. J., and Almansi, R., *J. Nerv. Ment. Dis.*, 1942, **95**, 395.
5. Jensen, E., *Acta Psychiat. Kbh.*, 1952, **80**, Suppl. 28–129.
6. Kalinowski, L. B., and Hoch, P. H., *Shock Treatments, Psychosurgery, and other Somatic Treatments in Psychiatry*.
7. Notkin, J., Miles, G. R., De Natale, F. J., and Wittman, G., *Amer. J. Psychiat.*, 1939, **96**, 681.
8. Polonio, P., and Slater, E., *J. Ment. Sci.*, 1954, **100**, 442.
9. Rees, L., *ibid.*, 1949, **95**, 625.
10. Russell, R. J., Page, L. G. M., and Jillett, R. L., *Lancet*, 1953, *i*, 1177.
11. Wittenborn, J. R., and Lesser, G. S., *J. Clin. Psychol.*, 1951, **7**, 317.

https://doi.org/10.1192/bjp.104.436.860 Published online by Cambridge University Press