ROLE OF ECT PHENOThIAZINE COMBINATION
IN SCHIZOPHRENIA

A. K. AGARWAL
G. C. WINNY

SUMMARY

A prospective double blind study was conducted to evaluate the role of E.C.T. in schizophrenia. Before the start of the trial patients were kept on chlorpromazine in adequate dosage for 30 days. Those who showed fifty percent or more improvement during this period were excluded. All patients were given eight modified or simulated E.C.T.s. The patients were followed up for one month. E.C.T. did not show any added advantage over chlorpromazine either initially or during short term follow-up.

The role of electroconvulsive therapy (ECT) in schizophrenia has remained controversial. Redlich and Freedman (1966) stated that ECT should not be used in schizophrenia except in some cases of catatonia. There are a number of studies which compared ECT with phenothiazines (Baker et al 1958, Langsley et al 1959, Childers 1964, Lassenius et al 1973) and ECT phenothiazine combination with phenothiazines (Taylor and Fleminger 1980, Jankiramiah and Subbakrishna 1981, Jankiriamiah et al 1982). In most of these studies phenothiazines and ECT were administered at the same time; phenothiazines require 4-6 weeks for the onset of anti-psychotic activity and studies which compare ECT with phenothiazines may appear favourable to ECT if the phenothiazines are not administered for at least 4 weeks before the comparison. Therefore, in the present study we planned to administer phenothiazines in adequate dosage for 30 days so that at the time of comparison with ECT drug activity should be at its peak. The aim was to evaluate whether addition of ECT to phenothiazines produces any significant improvement in patients suffering from schizophrenia.

Material and Methods

All schizophrenic patients hospitalized under the care of the author (A.K.A.) during the study period and fulfilling research diagnostic criteria for schizophrenia (Spitzer et al 1978) who were in the age range of 17 to 50 years were included. Those having continuous illness of more than 2 years, of less than one month or who had received E.C.T. in the past were excluded. In all, fifty eight patients were included. Informed consent was obtained from the first degree relatives of the patients for participation in the study.

The study was divided into three phases (a) evaluation (b) comparison and (c) follow-up. During the phase of evaluation all patients were kept on chlorpromazine 600 mg/day in divided dosage. Chlorpromazine has been selected as the representative of psychotropic drugs as this drug has been most widely used in treatment of schizophrenia and is considered to be group representative. All cases were assessed on B.P.R.S. (Overall and Gorham 1962) on day 1 and later very week. This scale consists of 16 items which are rated on seven point scale. This scale measures changes in the severity of the illness quite effectively. This scale has been widely used in clinical trials. Patients requiring sedation were given injectable phenobarbitone or diazepam for

1. Reader
2. Senior Resident

Department of Psychiatry, K.G.'s Medical College, Lucknow.
patients who were unmanageable. At the end of one week the dosage of chlorpromazine was increased to 900 mg/day, for those who were not manageable even on 900 mg by the end of the second week the dosage was increased to 1200 mg. At the end of four weeks 28 patients showed a reduction of more than 50% in their B.P.R.S. score and these were called quick responders.

The remaining 30 patients were included in the phase of comparison. The dosage of phenothiazines were kept constant in this phase. Fifteen patients were receiving 600 mg/day, eleven 900 mg/day and four 1200 mg/day of chlorpromazine. These patients were randomly divided into modified ECT (M.E.C.T.) and simulated E.C.T. groups (S.E.C.T.). The E.C.T. group were given E.C.T. (Bitemporal electrode placement) on alternate days to a total of 8 treatments. E.C.T. was given under thiopentone anaesthesia with succinylcholine as muscle relaxant. The simulated E.C.T. group was given only thiopentone anaesthesia but no E.C.T. All cases were assessed on B.P.R.S. one day after the 3rd, 6th and 8th treatment in both the groups. The assessor was blind to the mode of treatment.

Later these 30 patients were followed up for one month. They were assessed on B.P.R.S. after 15 and 30 days.

**Results**

During the first phase fifty eight patients were kept on chlorpromazine. At the end of 30 days the responder mean B.P.R.S. score changed from $55.14 \pm 16.28$ to $24.82 \pm 3.67$. In the non-responders the mean B.P.R.S. score changed from $57.13 \pm 9.04$ to $49.16 \pm 9.89$. These non-responders were then randomly allocated to M.E.C.T. and S.E.C.T. groups.

Table 1 shows the improvement in these two treatment groups during the phase of treatment and follow-up. The improvement in M.E.C.T. group became significant after 8 treatments while in S.E.C.T group the significance was perceptible at each step of evaluation. Patients on both treatment groups improved significantly.

To compare the relative efficiency of E.C.T. phenothiazines combination over phenothiazine analysis of covariance was done (Table 2).

This (Table 2) clearly reveals that there

| Table 1 |
|-------------------|-------------------|-------------------|-------------------|
| Mean of Total BPRS Score at each evaluation | **MECT** | **SECT** |
| Mean | S.D. | 't' Value | Mean | S.D. | 't' Value |
| Baseline | 46.33 | 8.25 | - | 52.00 | 10.52 | - |
| After 3 treatments | 44.13 | 7.08 | 1.36 | 47.53 | 9.04 | 3.56* |
| After 6 treatments | 42.33 | 6.63 | 1.76 | 45.00 | 9.78 | 6.11*** |
| After 8 treatments | 36.40 | 7.02 | 4.88*** | 42.13 | 9.09 | 4.83*** |
| 15 days after stopping treatment | 32.20 | 7.18 | 5.16*** | 40.46 | 9.32 | 5.87*** |
| 30 days after stopping treatment | 30.27 | 8.91 | 4.88*** | 36.60 | 9.11 | 6.96*** |

Treatment stands for MECT or SECT. All 't' comparisons have d.f. 14.

*p < 0.05, **p < 0.01, ***p < 0.001
Table 2

Adjusted Mean of BPRS Total Score (After Analysis of Covariance at each evaluation)

| Baseline score | After 3 treatments | After 6 treatments | After 8 treatments | 15 days after stopping treatment | 30 days after stopping treatment |
|----------------|--------------------|--------------------|--------------------|----------------------------------|---------------------------------|
| MECT (N = 15)  | 46.33              | 46.14              | 44.24              | 38.07                            | 33.39                           | 31.16                           |
| SECT (N = 15)  | 52.00              | 45.32              | 43.09              | 40.25                            | 39.27                           | 35.64                           |

F Value - 0.29 (NS) 0.28 (NS) 1.05 (NS) 4.04 (NS) 1.70 (NS)

Treatment stands for MECT or SECT, d.f. for all values = 1, 27

Table 3

Adjusted Mean of BPRS score of depression (After analysis of Covariance)

| Baseline score | After 8 treatments | 30 days after stopping treatment |
|----------------|--------------------|---------------------------------|
| MECT (N = 15)  | 2.20               | 1.65                            | 1.20                           |
| SECT (N = 15)  | 2.66               | 1.88                            | 1.86                           |

F. Value - 0.29 (NS) 0.28 (NS) 1.05 (NS) 4.04 (NS) 1.70 (NS)

Discussion

Our results are in agreement with most of the later well designed studies that E.C.T. offers no special advantage in the treatment of acute schizophrenia (Janakiramaiah et al 1982, Joyce et al 1982, Bagadia et al 1983). Taylor and Fleminger (1980) showed that E.C.T. phenothiazine combination shows early superiority to phenothiazine alone, but in this study the dosage of phenothiazines was low. Janakiramaiah and Subbakrishna (1981) obtained similar results when the dosage of chlorpromazine was kept at 300 mg/day. Cole and Davis (1969) emphasized that the dosage of chlorpromazine should be 500 mg/day if one wants to have better results than placebo. Studies that compare phenothiazines with phenothiazine E.C.T. combination are likely to show superiority of the latter because phenothiazines take four to six weeks for their antipsychotic activity to be fully evident (Davis 1980). One month of phenothiazine administration prior to the comparison phase appears to be very important for valid comparisons. The present study also failed to show any evidence of quicker response in patients receiving E.C.T. On the other hand, patients receiving E.C.T. showed significant improvement only after 8 E.C.T. while the S.E.C.T group showed improvement at each step of evaluation. E.C.T. did not produce any benefit on most clinical variables except depression. Patients who score high on depression on
B.P.R.S. did show better response with E.C.T. at the end of one month of follow-up. E.C.T. may have a role in depressed schizophrenics. This study may be criticised for using only 8 E.C.T., while Wessels (1971) suggested that as many as 20 E.C.T. should be given. Our patients showed adequate improvement with fewer E.C.T. than this.

E.C.T. does not appear to provide any advantage in schizophrenics who are being adequately treated with phenothiazines but may have value in depressed schizophrenics. This study has nothing to say about the possible usefulness of E.C.T. in catatonic stupor, where it may be life saving.

Acknowledgement

The authors are grateful to May and Baker India Ltd., for supplying Chlorpromazine tablets.

References

BAKER, A. A., GAME, J. A. & THORPE, J. G. (1958), Physical treatment for schizophrenia, Journal of Mental Science, 104, 860-864.

BAGADIA, V. N., ABHYANKAR, R. R., DOSHI, J., PRADHAN, P. V. & SHAH, L. P. (1983): Reevaluation of E.C.T. in schizophrenia, Psychopharmacology Bulletin, 19, 550-555.

CHILDERS, R. T. (1964), Comparison of four regimes in newly admitted female schizophrenics, American Journal of Psychiatry, 120, 1010-1011.

COLE, J. O. & DAVIS, J. M. (1969), Antipsychotic drugs. In the schizophrenic syndrome (ed. Bellak L. and Loeb, L.) New York: Grune and Stratton.

DAVIS, J. M. (1980), Antipsychotic drugs. In Comprehensive Text Book of Psychiatry, Vol. 3, Edition. 3 pp. 2259 (eds. Kaplan H. I., Freedman, A. M. and Sadock, B. J.), Williams and Wilkins, Baltimore.

JANAKIRAMAIAH, N. & SUBBAKRISHNA, D. K. (1981), E.C.T. – Chlorpromazine combination compared with chlorpromazine only in schizophrenia, Indian Journal of Psychiatry, 23, 230-233.

JANAKIRAMAIAH, N., CHANNABASAVANNA, S. M., & NARASIMHA MURTHY, N. S. (1982), ECT-Chlorpromazine combination versus chlorpromazine alone in acutely schizophrenic patients, Acta Psychiatrica Scandinavica, 66, 464-470.

LANGSLEY, D. B., ENTERLINE, J. D. & HICKERSON, G. K. (1959), A comparison of chlorpromazine and ECT in the treatment of acute schizophrenic and manic reactions, Archives of Neurology and Psychiatry, 81, 384-391.

LASSNISUS, B., OTTOSSON, J. O. & RAPP, W. (1973), Prognosis in schizophrenia: The need for institutional care, Acta Psychiatrica Scandinavica, 49, 295-305.

OVERALL, J. E. & GORHAMS, D. R. (1962), The Brief Psychiatric Rating Scale, Psychological Reports, 10, 799.

REDLICH, F. C. & FREEMAN, D. X. (1966), The theory and practice of psychiatry. Basic Books, p. 377, New York.

SMALL, J. G., MILSTEIN, V., KLAPPER, M., KELLMANN, J. J. & SMALL, I. F. (1982), ECT combined with neuroleptics in the treatment of schizophrenia, Psychopharmacology Bulletin, 18, 34-35.

SPITZER, R. L., ENDICOTT, J. & ROBIN, E., (1978), Research diagnostic criteria. Rationale and Reliability, Archives of General Psychiatry, 35, 773.

TAYLOR, P. & FLEMINGER, J. J. (1980), ECT for schizophrenia, Lancet, June 28, 1380-1383.

WESSELS, W. H. (1972), A comparative study of the efficacy of bilateral and unilateral electroconvulsive therapy with thioridazine in acute schizophrenia, South African Medical Journal, 890-892.