

The use of electroconvulsive therapy in the treatment of psychiatric illness at Umzimkulu Hospital in Transkei

A retrospective study

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Summary

Out of 1816 patients admitted to Umzimkulu Hospital between 1976 and 1982, 378 (20,8%) received electroconvulsive therapy (ECT) in combination with drugs. The use of ECT at this hospital is described and comparisons are made between ECT and non-ECT patients using length of stay in hospital as the criterion variable. The percentage of patients receiving ECT dropped from 32% in 1976 to 6% in 1982, when it was discontinued. ECT patients tended to be slightly younger and stayed in hospital a few days more. There was a tendency for all groups of patients, male v. female, first admissions v. previously admitted, to stay in hospital slightly longer if they received ECT. It is suggested that the use of ECT in addition to neuroleptics was probably a reflection of the severity of symptomatology.

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Electroconvulsive therapy (ECT) was first used in 1938 as a treatment for schizophrenia.¹ The principle on which it was introduced into clinical practice was the erroneous belief that epilepsy and schizophrenia could not coexist in the same patient and so it was conjectured that inducing a seizure by electrical means would effectively treat schizophrenia.

The technique consists of passing an electric current through the head either by placing an electrode on either side of the head (bilateral ECT) or placing both electrodes on the same side (unilateral ECT). The electric current induces an epileptic-like seizure, which is believed to be the therapeutic agent. The modified form of ECT involves the administration of an anaesthetic and muscle relaxant with the additional use of oxygen delivered to the patient through a mask. These are regarded as necessary precautions to minimising the risk of fractures and dislocations (mainly of the jaw), which Kendell² has reported affected 'up to 30% of patients in some series'. However, in under-developed countries, the unmodified form of ECT is still practised, possibly due to lack of professional skills and other resources needed for the modified form.

The efficacy of ECT, its clinical indications and contra-indications, mode of administration, public attitudes, etc. have been discussed at length by Kendell.² It is generally believed that ECT is effective for treating depression and is often found to be the only choice for patients who have failed to respond to drugs or who have refused to eat or those who are at great risk

of committing suicide. On the other hand, the efficacy of ECT in the treatment of schizophrenia has been a subject of heated debate, and Salzman³ concluded that relevant studies on the subject have been unable to give conclusive evidence concerning the superiority of ECT. He observed that most of the studies did not meet acceptable research criteria and he felt that the subject needed further study. Abraham and Kulhara⁴ performed a small double-blind trial in which a group of 11 patients were allocated randomly to an ECT-trifluoperazine combination and another group of 11 patients to a simulated ECT-trifluoperazine regimen. The recovery of the patients was monitored over a period of 26 weeks and it was found that ECT accelerated the process of recovery within the first 12 weeks. However, during the subsequent weeks, the superiority of ECT could not be ascertained; this same phenomenon had been reported earlier by Taylor and Fleming⁵ and Brandon *et al.*⁶

The findings of a retrospective study of the use of ECT in the treatment of psychiatric patients at Umzimkulu Hospital are reported. We describe the frequency of its use from 1976, when the hospital was established, up to 1982 when ECT was discontinued. In addition, we report on some comparisons made on two groups of patients who were treated with similar drugs with or without ECT, using length of stay in hospital as the criterion variable.

Methods and results

A detailed review of 1816 case notes was carried out and it was found that 378 patients (20,8%) had received ECT in combination with drugs. During the first 2 years of the hospital's existence, nearly 30% of patients received ECT but in subsequent years the percentage dropped substantially. The observed percentages of ECT recipients were as follows: 1976 — 32%; 1977 — 31%; 1978 — 16%; 1979 — 13%; 1980 — 17%; 1981 — 12%; 1982 — 6%.

Of the 378 patients who were treated with ECT, 312 or 82,5% were diagnosed as having schizophrenia (including catatonic schizophrenia 6%; chronic schizophrenia 4%). The remaining patients had a variety of diagnoses including: epilepsy 8 patients; alcoholism or cannabis abuse 5; senile dementia 4; depression 4; undetermined 4; not recorded 7.

Among the 1438 patients who did not receive ECT, 64% were diagnosed as schizophrenics, 9% as epileptics; and 7% as suffering from alcoholism or cannabis abuse. In this group there were a total of 10 patients diagnosed as depressives and multiple diagnoses were common.

Thus, the two groups of ECT and non-ECT patients were quite heterogeneous, not only in terms of diagnoses, but also in respect of medication. From the 1816 patients a subgroup of 414 was chosen consisting entirely of schizophrenics who were treated either with fluphenazine decanoate (Modecate; Squibb) and chlorpromazine (Largactil; Maybaker) or with fluphenazine decanoate, chlorpromazine and haloperidol

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(Serenace; Searle), in combination with ECT or without ECT. This subgroup was studied to find out whether ECT was effective in reducing the length of stay in hospital among patients who had received almost identical medication.

Characteristics of selected patients

Among the subgroup of 414 patients there were 121 ECT recipients and 293 non-recipients. There were 299 men of whom 86 had received ECT, and 115 women of whom 35 had been treated with ECT. All patients in this subgroup were schizophrenics who were treated with fluphenazine decanoate (1 ml injection on admission and then 1 ml/mo.) and chlorpromazine (300 mg/d) with or without ECT. ECT was administered within a period not exceeding 10 days, the majority receiving the treatment every day for 7 days. No further ECT was administered. Unfortunately, the records did not indicate whether unilateral or bilateral ECT was given but it is known that all patients received the unmodified form in which no anaesthetic was administered. For many patients chlorpromazine was either reduced after the period of ECT to 150 mg/d or it was replaced by trifluoperazine 15 mg 3 times a day. The decision to administer ECT was always made at the first examination by a medical officer, which often took place on the first or second day after admission to hospital.

The mean age of ECT recipients was 30,7 ± 9,9 years and it was found to be significantly lower than the mean age of non-ECT patients (34,3 ± 12 years; *P* < 0,005). Male patients were generally younger (mean 32,8 years) than female patients (mean 35,6 years; *P* < 0,015). However, in the analysis of variance the sex-ECT interaction was not statistically significant (*P* = 0,33), indicating that men or women who received ECT were generally as old as men or women who did not receive ECT (ECT male patients — mean 30,2 years, female patients — mean 31,9 years; non-ECT male patients — mean 33,3 years; female patients — mean 37,2 years). There were 332 first admissions and 82 patients who had been admitted to a psychiatric hospital at least once before in the subgroup.

The 86 male patients who received ECT stayed in hospital for an average of 65,1 days compared with 58,9 days for male patients on medication only. The analysis of variance gave a non-significant sex-ECT interaction for the length of stay in hospital (*P* = 0,65) and neither the sex effect (*P* = 0,47) nor the ECT effect (*P* = 0,27) were significant. The mean number

of days spent in hospital for ECT recipients and non-ECT patients are given in Table I.

TABLE I. MEAN LENGTH OF STAY IN HOSPITAL (DAYS)

Category	No. of patients	Mean stay (d)
ECT recipients		
Men	86	65,1
Woman	35	65,0
First admissions	98	65,6
Previously admitted	23	63,0
Non-ECT patients		
Men	213	58,8
Women	80	63,5
First admissions	234	61,6
Previously admitted	59	54,2
All patients	414	61,5

The life-table method

On the basis of the leaving experience of patients in different groups (Table I), the 'survivor functions' were estimated for weekly intervals using the life-table procedure of the Statistical Analyser Systems computer package.⁷ Classic life-table estimates based on survivor functions were made along the lines suggested by Barclay,⁸ and 'duration expectancy', similar to life expectancy in classic life-tables, was computed. The results are shown in Table II and it is apparent that patients who were treated on medication alone stayed in hospital for a marginally shorter period of time (uniformly at time X; measured in weeks) than patients who received ECT in addition to neuroleptics.

Discussion

In the treatment of schizophrenia ECT is believed to be beneficial in ameliorating catatonic symptoms and excitement.⁴ It has also been observed that ECT is more effective in

TABLE II. DURATION EXPECTANCY AT WEEK X FOR SCHIZOPHRENIC PATIENTS RECEIVING ECT AND NOT RECEIVING ECT*

Week X No. of patients	All 414 patients		Men		Women		First admissions		Previously admitted	
	E	NE	E	NE	E	NE	E	NE	E	NE
0	121	293	86	213	35	80	98	234	23	59
1	9,3	8,6	9,4	8,4	9,3	8,1	9,4	8,9	9,0	7,8
2	8,3	7,6	8,4	7,5	8,3	7,1	8,4	7,9	8,0	6,8
3	7,3	6,7	7,4	6,5	7,3	6,1	7,4	6,9	7,0	5,8
4	6,4	6,0	6,5	5,9	6,3	5,1	6,5	6,2	6,0	5,1
5	6,2	5,4	6,6	5,5	5,3	4,1	6,3	5,7	5,6	3,9
6	5,7	5,0	6,4	5,3	4,6	4,1	5,7	5,3	6,3	3,5
7	5,8	5,1	6,6	5,7	4,2	4,1	6,2	5,1	5,8	3,4
8	6,1	5,3	7,1	6,0	4,3	4,1	5,9	5,8	5,3	3,3
9	5,8	5,2	6,4	5,9	4,4	4,0	6,1	5,8	5,3	3,3
10	5,8	5,3	6,1	6,0	5,0	4,1	5,9	5,9	7,8	3,3
10	5,9	6,0	6,0	6,7	5,5	4,3	6,9	6,5	6,6	3,5

E = patients who received ECT treatment; NE = non-ECT patients.

treating acute than chronic schizophrenia. In this study we found that the difference in duration expectancy for the period spent in hospital at week X was more pronounced between ECT recipients and those patients who were treated on drug therapy in the previously admitted category. This was also reflected in the mean duration, which was 63,0 days for ECT patients and 54,2 days for those who received medication alone, among patients who had been previously admitted. However, since the analysis of variance did not show a significant ECT effect, and because the number of patients in the ECT group who had previously been admitted was small, these observations cannot be viewed as conclusive. On the other hand, ECT did not give shorter duration expectancy for any of the categories in Table II.

The duration expectancy can be given the same interpretation as life expectancy in life-tables. This number incorporates the leaving experience of a group of persons at each preselected point in time, X, and it can be defined as the average length of stay expected for those individuals who have survived up to time X. Although the common arithmetic mean of the length of stay is easily understood and is subject to well-known statistical laws, such as the central limit theorem, in a study involving members of a population subjected to different risks at different points in time, the life-table measure is more appropriate.

Studies of the effect of ECT-drug combinations on the length of stay in hospital have produced conflicting results. Among the studies that reported shorter duration are those of Kincross-Wright⁹ and Rhode and Sargent¹⁰ while the study of Salzman,³ quoting extensively from published reports, found longer duration for ECT patients than for those treated on drugs alone.

In this study we have reported that at Umzimkulu Hospital a very large proportion of psychiatric patients were given ECT (almost 30% in the period 1976 - 1977 and 21% for 1976 - 1982). The conclusion is that ECT was used routinely in clinical practice at the hospital, particularly in the earlier years of the hospital's existence. In several states in the USA, however, the use of ECT has been curtailed by legislation and Kendell² has reported that between 3% and 5% of psychiatric patients receive ECT in Europe and North America. This study also showed that ECT patients within the subgroup of schizophrenic patients tended to be younger than those treated on neuroleptics alone. This could be partly explained by the fact that the unmodified form of ECT was administered and therefore care had to be exercised in choosing patients who were likely to suffer minimal side-effects from ECT treatment. Apart from this, there do not seem to have been clear-cut selection criteria for ECT. On the other hand, the decision to administer ECT in addition to neuroleptics could have been a reflection of severity of symptoms or indeed of an affective component to the primary condition. Could this then explain why ECT patients tended to stay in hospital for a slightly longer period or was the increased length of stay a reflection of inadequate treatment for schizophrenia among black patients?

Concerning the issue of whether the discontinuation of ECT at Umzimkulu Hospital was correct — making a case for ECT, Kendell² stated that until drugs of comparable efficacy and safety are developed: 'It is essential that ECT should remain freely available on the same terms as any other treatment. Psychiatrists have too few effective therapies at their disposal to be able to afford the luxury of dispensing with what is still the most dramatically effective of them all.' Similarly, Rahman¹¹ expressed a positive opinion of ECT in the treatment of schizophrenia in Pakistan, which is a developing country. Abraham and Kulhara,⁴ working in India, also thought that

the use of ECT could be cost-effective since it seemed to speed up the process of recovery in schizophrenic patients. It would seem that more studies are needed regarding the role of ECT in the treatment of psychiatric illness in developing countries. An important issue will be to address the operational problems regarding the administration of ECT, including the maintenance of ECT equipment. Kendell² reported that in one health region in England, 50 faults were found in 18 ECT machines in regular use, and it is likely that, given the technological advancement in England, these faults were rectified as soon as they were discovered. However, at many rural hospitals in Africa and other Third-World countries there may be no personnel easily available to check for faults in ECT machines, let alone rectify them.

The debate on whether to re-introduce ECT at Umzimkulu Hospital is continuing. This hospital is a very important institution with a catchment area of nearly 3 million people and therefore it is not surprising that some depressed patients, who could possibly benefit from ECT, present at the hospital. The extreme policy of abandoning the treatment in 1982 could have resulted from the other extreme policy of large-scale use without careful evaluation of its beneficial effects. But, in view of the documentary evidence from other parts of the world concerning the efficacy of ECT, a controlled policy for its administration, including strict selection criteria, seems to be necessary. Like many other hospitals in developing countries, Umzimkulu Hospital has had the problem of high staff turnover with doctors coming from different parts of the world having different training orientations in different cultural settings. While this is not a bad thing *per se*, we would argue that this phenomenon does not help to sustain much continuity in respect of establishing specific traditions within a hospital. For continuity to be maintained in the context of ECT administration, a documentation system would be needed to enable a clinician to assess the efficacy of the treatment over a long period in relation to specified categories of patients coming to the hospital.

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