PAPERS AND SHORT REPORTS

Electric convulsion therapy in depression: a double-blind controlled trial

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Abstract

The therapeutic effect of simulated and real bilateral electric convulsion therapy was examined in a double-blind, randomised trial on 22 patients with primary depressive illness. Each treatment was given twice weekly for three weeks and the results assessed by the psychiatrist using a visual analogue rating scale, nurses using a nine-point rating scale, and the patients themselves using the Beck Depression Inventory.

With all three methods of assessment patients given the real treatment substantially improved ($p < 0.001$), whereas those given simulated treatment showed little change. Three weeks after substituting real treatment for simulated, however, these patients were also significantly improved (psychiatrist's rating $p < 0.001$; nurses' rating $p < 0.005$; Beck inventory $p < 0.005$).

These findings confirm the value of electric convulsion therapy in severe depressive illness and strongly suggest that the convulsion is important for the therapeutic effect.

Introduction

Electric convulsion therapy has been used for over 40 years in the treatment of depressive illness. Though at its introduction the evaluation of treatment by double-blind controlled trials was uncommon, several investigations over the years have shown electric convulsion therapy to be of considerable value in this condition.[1]

The importance of the convulsion in the therapeutic effect has been the subject of recent and conflicting reports. In one study[2] the effects of giving either two real or two simulated doses of electric convulsion therapy were compared, and despite both groups receiving concomitant antidepressant treatment, a clear advantage for electric convulsion therapy was reported. A second[3] study also found a significant advantage of eight real over eight simulated treatments, but a third investigation[4] failed to find any significant difference between six real and simulated treatments.

In view of these conflicting investigations I report a double-blind comparison of simulated and real electric convulsion therapy in patients suffering from primary depressive illness.

Patients and methods

Twenty-five inpatients with primary depressive illness[5] were selected for the study and gave their consent for the investigation. One patient in the electric convulsion therapy group and one in the simulated group were withdrawn from the trial in the first week because of concern about their lack of improvement. Another patient in the real electric convulsion therapy group could not complete the Beck Depression Inventory[6] and was withdrawn from the trial in the first week.

The remaining 22 patients, admitted to the trial after at least one week's assessment as an inpatient, were randomly allocated to receive either real or simulated electric convulsion therapy. The mean age of the real electric convulsion therapy group was 52.0 ± 3.3 years and of the simulated group 53.3 ± 6.9 years. Table I shows the sex distribution.

TABLE I—*Psychiatrist's rating of patients receiving real and simulated electric convulsion therapy (visual analogue rating scale). Results expressed as means ± SEM*

Group	M	F	Base	Week 1	Week 2	Week 3	After treatment
Electric convulsion therapy	6	5	67·9 ±4·7	47·4* ±4·2	34·1* ±3·2	19·5* ±5·4	15·8* ±4·6
Simulated electric convulsion therapy	7	4	70·7 ±6·5	70·8 ±5·9	68·9 ±4·2	63·4 ±5·2	72·2 ±5·4

*Significant reduction from baseline: $p < 0.001$ (method of paired comparisons).
Change in rating for real electric convulsion therapy group significantly greater than corresponding change in simulated group: one week $p < 0.02$; two weeks, three weeks, and after treatment $p < 0.001$.

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Treatment was given twice weekly, and its nature was kept blind both to the patients and to the assessors. All patients were premedicated with 80 mg atropine subcutaneously. The anaesthetic agent was Althesin (alphadolone) and the muscle relaxant suxamethonium. Electric convulsion therapy was administered from a Transycon machine using 40 joules with double-sided unrectified waveform and bilateral anterior temporal placement of the electrodes. All patients were given 50 mg amitriptyline at night, and no other medication was prescribed.

After six treatments, if judged therapeutically desirable, patients were switched to the other treatment for a further six treatments.

Patients were assessed by the psychiatrist in charge using a visual analogue rating scale, one end being absent morbidity, and the other end the most severe depressive illness. The psychiatrist performed the rating the day after each treatment and again five days after the sixth and final treatment. Nurses rated the patients daily on a nine-point scale from "very much worse" to "very much better." The patients rated themselves on the Beck Depression Inventory before starting treatment and the day after each second treatment.

The results of all three assessments were presented before treatment (baseline) and thence weekly the day after each second treatment.

Results

Tables I, II, and III show the ratings during the first three weeks of treatment. There was a highly significant and clinically important improvement in the electric convulsion therapy group, whether rated by the psychiatrist, nurses, or the patients themselves. The effects were apparent after one week of treatment. The patients treated by simulated electric convulsion therapy showed little clinical change during this period and differed significantly from the real electric convulsion therapy group in this respect.

Ten of the 11 patients receiving simulated electric convulsion therapy were switched to the alternative treatment. None of the electric convulsion therapy group was switched ($p < 0.005$). Table IV gives the results in the switched group. This group of patients responded significantly to real electric convulsion therapy.

TABLE II—*Beck Depression Inventory scores in patients treated with real and simulated electric convulsion therapy. Figures are means ± SEM*

Group	No	Base	Week 1	Week 2	Week 3
Electric convulsion therapy	11	26·6 ± 2·8	21·5* ± 3·3	15·3** ± 2·4	10·8** ± 2·6
Simulated electric convulsion therapy	11	24·1 ± 3·5	23·9 ± 3·6	21·7 ± 3·4	22·2 ± 3·8

Significant reduction from baseline: *$p < 0.05$; **$p < 0.001$ (method of paired comparisons).
Change in Beck score for real electric convulsion therapy group significantly greater than corresponding change in simulated group; one week $p < 0.05$; two weeks $p < 0.01$; three weeks $p < 0.002$.

TABLE III—*Nurses' rating scale for patients treated with real and simulated electric convulsion therapy. Figures are means ± SEM*

Group	No	Base	Week 1	Week 2	Week 3
Electric convulsion therapy	11	5·9 ± 0·4	3·0** ± 0·4	1·6** ± 0·2	1·2** ± 0·1
Simulated electric convulsion therapy	11	5·1 ± 0·4	3·8* ± 0·4	4·6 ± 0·5	4·2 ± 0·6

Significant reduction from baseline: *$p < 0.05$; **$p < 0.001$ (method of paired comparisons).
Change in nurses' rating for real electric convulsion therapy group significantly greater than corresponding change in simulated group: one week $p < 0.05$; two and three weeks $p < 0.001$.

TABLE IV—*Psychiatrist's, nurses', and Beck rating scales of change for 10 of 11 patients completing course of simulated and subsequently crossed over to real electric convulsion therapy. Figures are means ± SEM*

Rating by:	No	Base	Week 1	Week 2	Week 3	After treatment
Psychiatrist	10	73·4 ± 5·8	50·3* ± 5·9	31·9*** ± 4·9	14·5*** ± 4·0	11·9*** ± 3·3
Nurses	10	3·8 ± 0·4	3·8 ± 0·4	2·3* ± 0·2	1·6** ± 0·2	
Beck Scale	10	21·1 ± 3·6	17·6* ± 3·8	13·9* ± 3·6	10·7** ± 3·2	

Significant reduction from baseline: *$p < 0.05$; **$p < 0.005$; ***$p < 0.001$.

Discussion

The results of this trial are very strong evidence that the convulsion is an important part of the therapeutic effect of electric convulsion therapy. The patients, who had had at least one month's history of depression[5] and one week's assessment as an inpatient before admission to the trial, showed little improvement on simulated electric convulsion therapy but made a substantial improvement when given real electric convulsion therapy.

All trials on antidepressant measures tend to differ because of variation in patient selection, but there is now strong evidence from the results of these studies that the convulsion is important in the effect of electric convulsion therapy. It is perhaps relevant that the study showing no difference[4] used unilateral rather than bilateral electric convulsion therapy.

In this study electric convulsion therapy was shown to be an excellent treatment of severe depressive illness. The question of further treatment after the initial study was not investigated. It should be emphasised, however, that the relapse rate after electric convulsion therapy or after six weeks' treatment with an antidepressant remains high,[7–10] and that the optimal time for treatment after apparent recovery is six months. After electric convulsion therapy patients will remain vulnerable, and it is prudent to administer for six months either antidepressants or lithium.[11] If the depression is the patient's third or more episode then the question of prophylactic lithium should be considered.[12]

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Policy for prevention of Asian rickets in Britain: a preliminary assessment of the Glasgow rickets campaign

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Abstract

Evidence of continuing hospital admissions of patients with Asian rickets and osteomalacia led to a further attempt to provide more effective preventive measures for the Glasgow Asian community. Dose-response studies showed that the equivalent of 10 μg of vitamin D daily would provide effective prophylaxis, and a general practice survey showed that self-administered vitamin D supplements would reduce the prevalence and severity of Asian rickets. A multidisciplinary working group devised a preventive campaign based on the free issue of vitamin D supplements on demand to children who required them. Supported by a health education programme for community health personnel and the Asian community, the first 16 months of the campaign produced an eight-fold rise in the issue of supplements to older Asian children and a 33% increase in their issue to infants of all ethnic groups.

Because more children are receiving vitamin D supplementation the campaign seems likely to reduce the prevalence of Asian rickets in Glasgow.

Introduction

Rickets and osteomalacia remain common among Asians in Britain,[1-4] but prophylactic measures have been poorly organised and no account of an effective preventive campaign has been published. We describe the encouraging results of a campaign initiated by the Greater Glasgow Health Board in March 1979.

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Population data

PATIENTS DISCHARGED FROM HOSPITAL WITH NUTRITIONAL RICKETS AND OSTEOMALACIA

Altogether 138 Asians were discharged from Glasgow hospitals with a diagnosis of nutritional rickets or osteomalacia during 1968-78 (table I, fig 1). The Asian population of the city is estimated to have increased from about 8000 to 14 000 in this time. The annual incidence

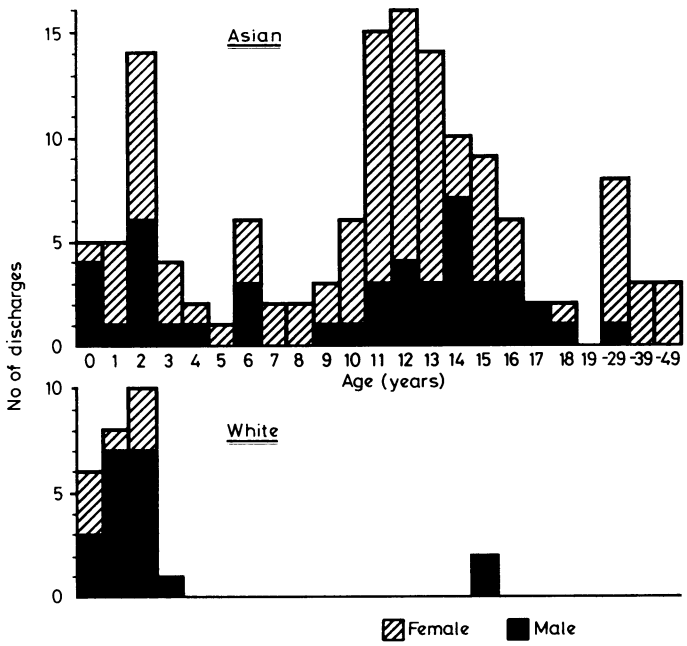

FIG 1—Numbers of white and Asian patients discharged from all Glasgow hospitals with nutritional rickets and osteomalacia between 1968 and 1978. Each case record was examined.