Improving electroconvulsive therapy practice through audit

C. Robertson, T. Wheeldon, J. M. Eagles and I. C. Reid

Recent studies have highlighted deficiencies in ECT service delivery. This audit was set up to monitor and improve the ECT administered in a large psychiatric service. In the first phase of the audit information was collected regarding stimulus adjustment in response to brief seizures. This highlighted inconsistencies in clinical practice and an education programme was instigated to correct these deficiencies and to bring practice into line with the Royal College of Psychiatrists guidelines. A repeat audit was performed and a marked improvement in the quality of stimulus adjustment was shown.

Previous audit has determined that electroconvulsive therapy (ECT) procedure and practice do not always meet proposed standards (Pippard, 1992). In particular the adjustment of electrical charge dose has been an area of inconsistent practice. Current guidelines recommend that sufficient electrical energy is delivered to the patient to ensure adequate seizure induction, as defined as a bilateral, tonic-clonic seizure lasting at least 25 seconds (Freeman, 1989). Whether or not seizures of 25 seconds or more are necessary to induce a maximal therapeutic effect remains a subject of debate (Weiner *et al*, 1983; Fink, 1991). However, if seizure activity does not occur, or lasts for less than 15 seconds, then re-stimulation during the same ECT session at a higher charge setting is recommended (Freeman, 1989). This ensures prompt receipt of adequate therapy, but with the potential penalty of increased cognitive impairment (Roemer *et al*, 1990). This report describes efforts made to monitor and improve ECT administration in Grampian to adhere to current recommended practice.

The study

All patients who received ECT in Grampian in the six months between November 1991 and April 1992 were examined. During this time a total of 94 depressed patients were given ECT on three hospital sites. After completion of each course of treatment, the patient's ECT record forms were examined, and it was determined whether the stimulus administered had been correctly altered in response to seizure length as measured using the Hamilton isolated forearm technique. Records were classified according to whether within a course of treatment: there was either no requirement for stimulus alteration or the stimulus had been correctly altered in response to a seizure less than 25 seconds, or the stimulus was either not altered correctly or only intermittently altered correctly within a course. The proportion of patients meeting criteria for re-stimulation was also recorded. The results of this phase of the study were presented to medical staff at an audit meeting and inadequacies in charge setting highlighted. A summary of the meeting was circulated and subsequent teaching of new senior house officers included a protocol for stimulus alteration (see appendix) indicating that charge settings should be increased on the next treatment if seizures of less than 25 seconds occurred.

Table 1. Stimulus alteration and requirement for re-stimulation

		A 1991/2	B 1993/4
1	Correct stimulus alteration, or no requirement for alteration	32 (34%)	41 (67%)
2	Inadequate stimulus alteration	61 (66%)	20 (33%)
3	No need for re-stimulation	42 (45%)	46 (75%)
4	Need for re-stimulation	51 (55%)	15 (25%)

Fourteen months after the initial data collection, the audit was repeated and similar data collected on two hospital sites to determine the impact of the new protocol on

https://doi.org/10.1192/pb.19.8.480 Published online by Cambridge University Press

practice. A total of 62 depressed patients were treated with ECT during this six month period. Adequacy of charge setting was available in 93 (99%) of 1991/2 patients (Table 1, column A) and in 61 (98%) of 1993/4 patients (Table 1, column B).

Findings

Charge setting had been significantly improved – Table 1, row 1 and 2 (χ^2 [with Yates correction]=14.611, DF=1; $P<0.0001$). Thirty-three per cent more patients had adequate charge setting following the audit presentation (95% confidence interval=18% – 48%). Analysis of ECT recording sheets indicated that following implementation of the audit proposals patients were 30% less likely to require re-stimulation according to College guidelines (Freeman, 1989) – Table 1, row 3 and 4 (χ^2 [with Yates correction]=12.556, DF=1; $P=0.0002$, 95% confidence interval 15% to 45%).

Comment

During the first audit in 1991, there was an inconsistent practice of stimulus adjustment for patients experiencing a 'short' seizure of less than 25 seconds, with 66% of patients experiencing seizures falling into this category. Closure of the audit loop demonstrates a measurable improvement in charge setting practice with reduced need for re-stimulation and increased accordance with the recommendations of the Royal College of Psychiatrists (Freeman, 1989), when full stimulus dosing is not attempted.

Acknowledgements

The authors wish to thank the medical staff and patients of Aberdeen Psychiatric Hospitals for their assistance and co-operation with this project. The initial project was funded by Grampian Health Board, Audit Committee.

References

FINK, M. (1991) What is an adequate treatment in convulsive therapy? *Acta Psychiatrica Scandinavica*, **84**, 424–427.

FREEMAN, C. P. (1989) *The Practical Administration of Electroconvulsive Therapy (ECT)*. ECT Sub-Committeee of the Royal College of Psychiatrists. London: Gaskell.

PIPPARD, J. (1992) Audit of ECT in two National Health Service regions. *British Journal of Psychiatry*, **160**, 621–637.

ROEMER, R. A., DUBIN, W. R., JAFFE, R., LIPSCHUTZ, L. & SHARON, D. (1990) An efficacy study of single-versus double-seizure induction with ECT in major depression. *Journal of Clinical Psychiatry*, **51**, 473–477.

WEINER, R. D., ROGERS, H. J., WELCH, C. A., DAVIDSON, J. R. T. *et al* (1983) ECT stimulus parameters and electrode placement: relevance to therapeutic and adverse effects. In *ECT: basic mechanisms*. (eds B. Lerer, R. D. Wiener & R. Belmaker) London: John Libbey.

*C. Robertson *Senior Registrar, Psychiatry*; T. Wheeldon, *Registrar, Psychiatry*; J. M. Eagles, *Consultant Psychiatrist; and* I. C. Reid, *Senior Lecturer in Mental Health, Royal Cornhill Hospital, Aberdeen AB9 2ZF*

*Correspondence

Appendix

ECT restimulation protocol

(1) *Patient has bilateral seizure of more than 25 seconds* (measured by Hamilton Cuff method) – no requirement for restimulation.

(2) *Patient has bilateral seizure 15 to 25 seconds* – note current administered and suggest increasing current by 25 mC at next treatment.

(3) *Patient has bilateral seizure less than 15 seconds* – restimulate patient with a dose 25 mC higher than previous dose, after 30 seconds has elapsed from end of first seizure.

(4) *No obvious seizure seen* – restimulate at a setting 25 mC higher than previous stimulation following 30 seconds after first stimulation.

When considering restimulation ensure that the patient's skin is clean, electrodes are in good contact with the skin, are correctly applied and sufficient pressure is applied.

Check with anaesthetist that restimulation is possible. If continued problems arise obtaining sufficient seizure time with patients please discuss with consultant in charge of ECT.