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Review of electroconvulsive therapy practice from a tertiary Child and Adolescent Psychiatry Centre

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ABSTRACT

Aims and objectives: The use of electroconvulsive therapy (ECT) in children and adolescents is a controversial issue. This study was done to examine the pattern and practice as well as the outcome of electroconvulsive therapy administered to children and adolescents admitted to a tertiary care centre.
Methodology: A 10 year retrospective chart review of all children and adolescents (up to 16 years of age) admitted in the Child and Adolescent Psychiatry Centre, National Institute of Mental Health and Neurosciences (NIMHANS) who had received at least 1 session of ECT was done. Information regarding diagnosis, reasons for prescribing electroconvulsive therapy, details regarding the procedure and outcome variables was collected from the records. Clinical Global Impressions (CGI) scale rating of the severity of illness and improvement seen were done by 2 trained psychiatrists independently.
Results: 22 children and adolescents received electroconvulsive therapy over 10 years. There were an equal number of boys and girls. All received modified ECT. Most patients who received electroconvulsive therapy were severely ill. Catatonic symptoms 54.5% (12) were the most common reason for prescribing electroconvulsive therapy. It was efficacious in 77.3% (17) of the patients. Electroconvulsive therapy was relatively safe, and most experienced no acute side effects. 68.2% (15) who were on follow up and did not experience any long term side effects due to the electroconvulsive therapy.
Conclusions: Electroconvulsive therapy has a place in the acute management of severe childhood psychiatric disorders. Further long term prospective studies are required.

1. Introduction

Electroconvulsive therapy has established itself as an important treatment modality for a variety of neuropsychiatric disorders in adults (Ueda et al., 2010; Hamoda and Osser, 2008; Fink, 2001; Chanpattana and Sackeim, 2010). Researchers in India have made notable contributions to the practice of ECT in these disorders (Gangadhar et al., 2010; Viswanath et al., 2013; Phutane et al., 2013; Thirthalli et al., 2011). However, the literature available on the use of this modality for treatment in children and adolescents is limited (Rey and Walter, 1997; Shoirah and Hamoda, 2011). To highlight this point, in a survey of the practice of electroconvulsive therapy in Asia, only 6% of the patients who received this modality were less than 18 years of age (Chanpattana et al., 2010). Most of the literature available on this population is based on case reports or series and has supported the view of ECT as an effective form of treatment, especially in serious mental illnesses (Rey and Walter, 1997; Hegde et al., 1997; Russell et al., 2002; Consoli et al., 2012; Moise and Petrides, 1996; Grover et al., 2013). This paucity of literature in the child and adolescent population could reflect the fact that a number of psychiatrists are circumspect about prescribing electroconvulsive therapy for clients in this particular age group due to a lack of adequate training and/or experience. In addition, there is a lack of systematic evidence of the effect of electroconvulsive therapy on the developing brain (Ghaziuddin et al., 2001a, 2001b). The nature of discourse on the topic of electroconvulsive therapy in the media has meant that the

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general public and policy makers regard its continued use critically, with attitudes that are more often skewed by hyperbolic suspicions rather than reasoned concerns (http://www.news-medical.net/health/Electroconvulsive-Therapy-Patient-Experience.aspx; Kothari and Chatur, 2012; Andrade et al., 2010). However, most adolescents – and parents of adolescents – who were treated with electroconvulsive therapy report that not only was the illness experience more arduous than the treatment itself, they would recommend it to others if it was prescribed by their doctor (Walter et al., 1999a, 1999b; Walter et al., 1999a, 1999b). The new Mental Health Care Bill (2013), drafted by the Department of Health and Family Welfare, Government of India, places the use of electroconvulsive therapy in minors under prohibited procedures (Mental Health Care Bill, 2013). Prohibiting the use of electroconvulsive therapy in minors amounts to denying a potentially lifesaving treatment option in those afflicted with most severe forms of mental illnesses. Not only is this a stance in contravention to the evidence available so far, albeit limited, but this may potentially result in prolongation of severe morbidity and possibly greater mortality. The short and long term adverse effects of this treatment modality have often been a point of concern and controversy. Studies have shown that while most patients have no serious side-effects, a small minority experience prolonged seizures, headache, nausea, vomiting, and post-ECT delirium (Grover et al., 2013; Mental Health, 1999). Apprehensions regarding the effect of electroconvulsive therapy on cognitive function have been addressed in a few studies which show that cognitive functions returns to baseline levels after treatment and are similar to psychiatric controls (Cohen et al., 2000a, 2000b; Ghaziuddin et al., 2001a, 2001b).

The National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore has an exclusive child and adolescent psychiatry service and acts both as a primary and a tertiary care referral centre, not only for patients from surrounding states but across the country. We studied the frequency and indications for the use of ECT, along with the clinical profile of patients, effectiveness and incidence of adverse effects associated with this modality of treatment. We also collected information where available about the outcome (clinical and functional) in those who received electroconvulsive therapy in their adolescence.

2. Methodology

2.1. Setting and study period

The study was conducted at the Department of Psychiatry and Child and Adolescent Psychiatry at the National Institute of Mental Health and Neurosciences, Bangalore. It offers a tertiary care exclusive in-patient facility for children and adolescents less than 16 years of age. All children and adolescents who received electroconvulsive therapy are treated in the in-patient facility. Data was collected between September 2002 and September 2012 of children and adolescents (up to 16 years) who had received Electro Convulsive Therapy.

2.2. Assessment

All the children and adolescents included in the study had undergone a thorough assessment under the guidance of a Child and Adolescent Psychiatrist with all diagnoses made as per the International Statistical Classification of Diseases, 10th Revision (World Health Organisation, 1992). The decision to consider electroconvulsive therapy (ECT) as a mode of treatment was a made by the Consultant Psychiatrist and concurred with by another trained Psychiatrist and the ECT team.

2.3. Electroconvulsive therapy practice and procedure

Every patient received a pre-ECT evaluation which included a detailed medical and psychiatric history; clinical examination including a neurological examination, laboratory investigations which included a hemogram, biochemical parameters and an Electrocardiogram (ECG). A pre-anaesthetic check-up was also conducted by a trained anaesthesiologist. Written informed consent was obtained from the patients' parents and assent was obtained from the patient whenever possible. All patients received ECT on every alternate day (Monday, Wednesday and Friday).

The Institutional Ethics Committee approved the study. Reversible anonymization, limited access and disclosure of the data were done to ensure that confidentiality was maintained.

Treatment was administered using a NIVIQURE machine (Technonivilak, Bangalore, India). Through this machine brief-pulse stimulus is delivered with constant current at 800 mA, with a frequency of 125 pulses per second (62.5 Hz) and pulse width of 1.5 ms; the duration of train is altered to adjust the dose. Atropine (0.3–0.6 mg) was used as premedication to prevent vagally induced bradycardia and arrhythmias. Thiopentone (3–4 mg/kg) was used for induction and succinylcholine (0.5–1 mg/kg) was used for muscle relaxation. Seizure threshold was determined during the first ECT session by the titration method (Scott, 2005). During the course of ECT, if seizures were not elicited at the electrical stimulus that was used during an earlier session, then the new threshold was determined by the titration method again, starting from the previously used electrical dose. The cuff-method was used to record the duration of motor seizures. Additional electroencephalographic (EEG) monitored seizure duration records were available for 8 of the patients.

Every patient has an ECT record which included the indications for ECT, seizure threshold, duration of seizures and ECT-related complications. The referring psychiatrist would decide on the number of ECTs for each patient depending on the clinical response. The reasons for stopping ECT (clinical improvement/complication/withdrawal of consent, etc.) were also noted in the case records.

2.4. Procedure

All children and adolescents (less than 16 years of age) who received electroconvulsive therapy during the study period (September 2002–September 2012) were identified using the ECT register which is maintained by the hospital staff and cross-checked with the treatment register maintained by the in-patient staff of the Child and Adolescent Psychiatry Centre. The data was obtained from the records maintained by the Medical Records Department, NIMHANS. Socio-demographic, clinical, ECT related and outcome variables were extracted by two psychiatrists. The Clinical Global Impressions (Guy, 1976) scale was used to assess outcome after ECT by two psychiatrists independently. The Clinical Global Impressions Severity (CGI-S) was scored based on the information available on the first day of admission and the improvement was scored on the Clinical Global Impressions Improvement (CGI-I) scale based on the information available on the day prior to discharge. The Inter Rater Reliability (IRR) was established using Kappa statistics. The Kappa was 1 for the Clinical Global Impressions Scale for Severity (CGI-S) and 0.643 for the Clinical Global Impressions Scale for Improvement (CGI-I). Information during follow up was also sought including relapses, reason and time after electroconvulsive therapy for relapse and the patient's biopsychosocial functioning at the last contact which had been detailed in the records.