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ELECTROCONVULSIVE THERAPY: AN ESOTERIC TREATMENT

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ABSTRACT

Electroconvulsive therapy remains a treatment modality in psychiatry still shrouded in many myths and misperceptions. Despite its proven and time-tested efficacy in many psychiatric disorders, it continues to be projected in the popular media as a cruel treatment with many complications, leading to low acceptability amongst the general population and under-utilization for psychiatric disorders. This review aims to explore various issues related to practice and outcome of ECT, with special reference to its practice in Pakistan.

Electroconvulsive therapy (ECT) is one of the treatment methods in psychiatry that, insofar as its clinical effectiveness is concerned, has stood the test of time. Despite this, it is surrounded by controversy and low acceptability amongst the general population. The dramatic media images of a psychiatrist brutally administering ECT to a patient forcibly held down as he/she has a convulsion adds to the controversy.

The history of induced fits dates back to the nineteenth century. However, ECT was introduced in its current form almost seventy years ago.[1] In the basic ECT paradigm, psychiatrists follow a prescribed protocol to induce an epileptic seizure in the patient. A short-acting anesthetic and a muscle relaxant are given concurrently and the patient is oxygenated before a brief measured dose of electrical current is passed through the patient's brain. To prevent tongue biting, a mouth guard is inserted. The whole procedure is usually over in a few minutes.

The use of ECT is analogous to a surgeon's scalpel: in the wrong hands it can be life-threatening. The same instrument saves lives when used by the qualified surgeon. Similarly, ECT leads to complete recovery and in many cases can be a life-saving procedure. When consumer choices and cost-effectiveness of treatment dictate psychiatric decision making, the views of stakeholders assume central importance. This review attempts to explore some of the determinants behind the negative public image of ECT, with a special reference to Pakistan.

INDICATIONS

There is a substantial body of evidence to support the short-term efficacy of ECT as a treatment for depressive illness and its superior efficacy over anti-depressant drug treatment.[2] In the United Kingdom, revised guidelines from the Royal College of Psychiatrists recommend that ECT should be the treatment of choice for severe depressive illness when the illness is associated with attempted suicide, strong suicidal ideation, or life-threatening illness because of refusal of food or fluids.[3] ECT may also be the treatment of choice for the treatment of severe depressive illness associated with stupor or marked psychomotor retardation. The guidelines also recommend that ECT may be considered as a second- or third-line treatment of depressive illness that has not been adequately treated by anti-depressant drug treatment and where social recovery has not been achieved.[3]

Guidelines from the National Institute of Clinical Excellence (NICE) recommend more restrictive indications, stating that ECT should only be used to achieve rapid and short-term improvement of severe symptoms after an adequate trial of other treatment options has proven ineffective.[4] NICE recommends as a general principle that ECT be used only after an adequate trial of other treatments has proven ineffective, if the illness is not considered life-threatening. No guidance is offered on what can be regarded as 'adequate other treatments' for any of the conditions appraised.

The most common contemporary indication for ECT is treatment-resistant depressive illness.[5] Traditionally, it was held that ECT is a highly efficacious treatment for depressive illness irrespective of whether or not that illness had already failed to respond to anti-depressant drug treatment. This belief has been challenged by well conducted prospective research in the United States, which suggests that among contemporary patients with depression, a history of failure to recover with anti-depressant drug treatment reduces the likelihood of recovery with subsequent ECT.[6] These findings have not been replicated elsewhere. The literature is, however, consistent in that the majority of patients who have already failed to recover with anti-depressant drug treatment can subsequently recover with ECT.[7]

As far as other mood disorders are concerned, ECT has some role to play in the treatment of mania. However, this is only when mania is associated with life-threatening physical exhaustion or is treatment-resistant, i.e., mania that has not responded to the standard treatment of choice.[8] Similarly, ECT may be an option for treatment-resistant schizophrenia after treatment with two different antipsychotic drugs and clozapine has proven ineffective or intolerable.[3]

ECT has an established role in treatment of catatonia, a variety of schizophrenia characterized by marked psychomotor disturbance that may involve motoric immobility, excessive motor activity, extreme negativism, peculiarities of voluntary movement, and echolalia or echopraxia. The motoric immobility may be manifested by catalepsy (waxy flexibility) or stupor.[9] Although catatonia has become relatively rare in the West, such cases continue to present to psychiatric facilities in Pakistan.

Among other neuropsychiatric conditions, ECT has a role in the treatment of Parkinson's disease, where it is considered an adjunctive treatment for both motor and mood symptoms in patients with severe disability despite medical treatment. ECT remains an experimental treatment for disorders such as neuroleptic malignant syndrome (NMS), Huntington's disease, and treatment-resistant epilepsy.[1,3]

MODE OF ACTION

The major puzzle about ECT is how it works. How do seizures, which can be dangerous and damaging when they occur spontaneously, become beneficial? Neither anesthesia nor electric current is useful, nor, except rarely, is a single seizure. To be of benefit, seizures must be repeated two or three times a week for many weeks.

One plausible explanation involves the hormonal changes involving the hypothalamus-pituitary-adrenal axis. Repeated seizures stimulate the hypothalamus which subsequently causes pituitary hormones to be “squeezed out” and new levels are measurable in the cerebrospinal fluid (CSF) and peripheral blood within a few minutes.[10] Feeding and sleep become normal; then motor activity, mood, memory, and thought follow suit.

Initially, many researchers thought that direct stimulation of the hypothalamus was essential and that the production of the seizures was not necessary for the appropriate behavioral outcome. Electrical stimulation of the brain through midline electrodes, with one needle in the upper lip and the second in the vertex of the scalp (electro-acupuncture ECT), elicited the same effect as bitemporal electrode placement, but only when tonic-clonic seizures were observed.[11] Direct hypothalamic stimulation is an aim of studies in rapid transcranial magnetic stimulation (rTMS). However, the intent of rTMS is to demonstrate changes in neuroendocrine regulations and products in conjugation with persistent clinical benefits.[12]

PROBLEMS IN PAKISTAN

The mental health system in Pakistan is poorly organized. The nation's psychiatrist-to-population ratio is one psychiatrist to 0.5-1 million population. Only a few hospitals provide proper mental health care and available figures show that there are just 2,154 beds in the government mental health sector, with almost half of these allocated in three large custodial care centers.[13] The private sector makes up for this shortfall.

Psychiatric practice in Pakistan is largely unregulated. The use of unmodified ECT, i.e., without general anesthesia or muscle relaxant is carried out regularly in many hospitals (both government and private).[14] This has repercussions on the outcome of the procedure. It is not uncommon to see patients ending up with serious complications such as fracture of the spine or one of the long bones in the limbs.

On the other hand, many mental health facilities in Pakistan are known to overuse the procedure arbitrarily, without proper screening of patients. Improper prescription and screening of patients reflect uncertain standards of psychiatric practice. This has legal, ethical and socio-economic implications that need to be addressed.

The promulgation of the new Mental Health Ordinance has been a step in the right direction.[14] However, the administration of modified ECT is deemed as 'preferable' rather than mandatory. Almost all major tertiary care

centers in Pakistan have allied general medical and anesthesia services and provision of general anesthesia can be easily arranged. The administration of unmodified ECT is unethical and can have serious life-threatening complications for patients.

There is insufficient training of psychiatrists in the safe and effective use of ECT in training programs. Informed consent is often not obtained before the procedure, though this merely reflects the prevailing ethos of care in the country.

The type of ECT machine also has a bearing on side-effects. There is good evidence to show there are more cognitive side-effects with machines delivering sine-wave current compared with brief-pulse current.[15] Most machines in use in Pakistan are of the sine-wave variety. In addition, regular and periodic biomedical maintenance of ECT machines must be carried out.

ECT-RELATED RESEARCH IN PAKISTAN

There is no nationally representative data on the practice and outcome of ECT in Pakistan. In one of the few studies on the subject, a 13-year naturalistic review of ECT practice at a tertiary care university hospital in Karachi was carried out.[16] Of 4,013 patients admitted to the psychiatric inpatient unit, 136 (3.38%) received a total of 770 ECTs. The average number of ECTs administered per patient was 6 (range 1-20). ECT was administered with a brief-pulse constant-current apparatus. Medical co-morbidities were present in 35%, but none of the patients suffered any deleterious side-effects from the procedure. A total of 75% patients showed improvement in their clinical condition. No major complication was observed. The authors concluded that as long as proper protocol was followed and patient care was not compromised, ECT was as safe a procedure in Pakistan as in any developed country.

PATIENTS' VIEWS

Assessing patients' views of a treatment such as ECT is important for several reasons: it can determine patients' acceptability of the treatment, it can help modify media portrayal of the procedure, and the information can be used to advocate adequate ECT service utilization. A recent study by Arshad et al[17] exploring knowledge and awareness of psychiatric patients (n=190) at two tertiary care hospitals in Karachi showed that there were many myths and misperceptions about the procedure, a popular one being that ECT is used only as a treatment of 'last resort' and in cases of 'complete insanity' or 'imminent death'.[17]

The survey also revealed that common sources of information were, in order, the electronic media, print media, and relatives and friends. Only 23% identified doctors as a source of information. Further, while the majority accepted ECT's effectiveness as a treatment modality, 62% felt that the procedure would result in serious side-effects, including injuries, neurological impairments, cognitive disturbances, and pain.[17]

Around 42% of surveyed patients were skeptical of ECT's safety as a treatment modality, with 59% saying “no” when asked if they would agree to undergo ECT on the advice of a psychiatrist. However, 28% considered it completely safe, with 12% considering it safe only when the proper procedural guidelines were followed, i.e., with anesthesia and muscle relaxants. About one-third of patients surveyed felt ECT was unnecessarily prescribed by psychiatrists. The authors concluded that there are many misconceptions regarding ECT amongst psychiatric patients in Pakistan and a patient's willingness to undergo ECT treatment depends on being convinced of the treatment's safety aspect.[17]

Patients and their relatives' views on the practice and outcome of ECT has been a focus of other studies in parts of Asia. In a study examining attitudes toward, and satisfaction with, ECT involving 96 patients and their 87 relatives in Hong Kong, Tang et al[18] showed that the majority of patients believed they had not received adequate information about ECT.[18] The most commonly reported side-effect was memory impairment. Patients and their relatives had only limited knowledge of ECT, yet the majority was satisfied with the treatment and, having found it beneficial, maintained a positive attitude toward its use. The researchers concluded that Hong Kong Chinese patients and their relatives accepted ECT as a treatment. However, the way information was provided to patients and relatives when obtaining consent for ECT needed improvement

In a survey on second-year medical students at the University of Arkansas Medical School, Clothier et al[19] cite movies as the major source of information about ECT. Of interest is that those students who identified themselves as highly knowledgeable about psychiatric illness also had a more negative attitude towards ECT.[19] These students were no more likely to identify college classes or personal experience as their source of information about ECT. This would suggest that they are as likely to form their opinions about ECT based on nonscientific data as the students who did not view themselves as highly knowledgeable.

No such data is available from any medical college in Pakistan. However, one would expect that findings will not be any different. Surveys such as this can be very useful in revising medical school curricula to address defined

needs. The lack of information about ECT should be addressed by specific changes in the behavioral sciences and psychiatry curricula.

FUTURE DIRECTIONS

Although there are individual studies on the efficacy of ECT in older people with depression, women with post-partum exacerbation of depression, schizophrenia, and people with catatonia, there is a need for further, high-quality randomized controlled trials (RCTs) of the use of ECT in these specific subgroups that are most likely to receive this treatment.[20,21]

There are also no RCTs comparing the efficacy of ECT with newer medications that have dual-receptor profile, such as the serotonin and norepinephrine re-uptake inhibitors (SNRIs) for depression.

More research is also needed to compare ECT with rTMS, especially in people with schizophrenia. There is a need for high-quality RCTs comparing the use of ECT with these treatments.[12] There is only limited evidence regarding the role of maintenance ECT, a trend that is becoming routine at many centers around the world.[4]

NICE guidelines have a restrictive stance on maintenance ECT, stating that its longer-term benefits and risks have not been clearly established. Further work is also needed to develop ways of incorporating patients' perspectives on the impact of ECT into future RCTs and consideration should be given to the use of both quantitative and qualitative methods. The outcome measures used should reflect both clinical and patient perspectives on the impact of ECT.

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