Electroconvulsive therapy: why it is still controversial

Tomasz Cyrzyk looks at how this intervention came to be used to treat patients with severe mental illness, and why it still divides opinion

Abstract

Electroconvulsive therapy (ECT) is used in modern psychiatry worldwide, but is not fully understood by the general public, practitioners and researchers. Controversy continues to surround its application, the long-term consequences of its use and its legality in the management of the most serious mental illnesses, such as major depression, bipolar disorder and schizophrenia.

After describing the historical roots of ECT, the author provides a description of the main factors that divide opinion on its use today. This appreciation of the different perspectives, and comparison between attitudes in New South Wales, Australia, and in the UK, can inform the debate about this treatment.

Keywords

Adverse effects, electroconvulsive therapy, mental illness

Core issues

The controversy may also have been caused by the following factors:
- The therapy’s crude historical beginnings.
- The continuing and substantial adverse cognitive side effects and memory loss experienced by many people who have undergone ECT.
- The lack of information given when practitioners obtain informed consent before treatment.
- Treating patients against their will.
- The lack of formal rehabilitation programmes, including lack of proper testing of memory function before, during and after the treatment.
- The unknown mechanism of action.
- The lack of knowledge about the cognitive adverse effects and memory loss that can occur.
- Divergent views of clinicians and consumers about ECT.
- Wide variations in official guidelines on minimal standards of ECT use, depending on jurisdictions.

All of these factors will be considered in this overview of the subject. There are at least three schools of thought on ECT. The first group, mostly clinicians, is enthusiastic and optimistic about ECT as an effective treatment (Fink and Taylor...
2007, Shorter and Healy 2007). The second, mostly the ‘anti-psychiatry coalition’, strongly opposes ECT and psychiatry in general as abusive. The third treads a middle path, calling for a balanced view of the benefits, disadvantages and costs.

The first group tends to downplay the contentious aspects of the treatment, claiming that ECT, in most cases, is effective, safe and can save lives (Fink 2004). The second argues that the negative aspects and uncertainties associated with ECT are harmful, dubious and inhumane. While the third group maintains that it would be unethical not to make use of this proven treatment for those with severe mental illness, but calls for more appreciation of users’ perceptions and experiences, and further reform in its application and aftercare.

No consensus has been reached in this debate. In the meantime, ECT is accepted as a viable treatment option by most legislations and legal frameworks around the world.

Historical beginnings
Sabbatini (1998) described a period of discovery and innovation in psychiatry before the 20th century. This was based on observations of the relationship between mental health and the physical body. It had been recognised that head trauma, convulsions and high fever were somehow related, and could sometimes improve the mental states of disturbed people. He noted: ‘Hippocrates was the first to note that malaria-induced convulsions in insane patients were able to cure them. In the Middle Ages some physicians observed the same phenomenon after a severe bout of fever; such as cholera epidemics in insane asylums.

‘In 1786, a physician named Roess claimed improvement in mental patients after inoculation with the smallpox vaccine. Furthermore, many physicians along the centuries have noted that there are very few epileptics who are also schizophrenic, and a biological theory on the incompatibility of convulsions and mental disease slowly evolved’ (Sabbatini 1998).

Subsequently, between 1917 and 1934, there were successive developments in treating mental illness by physical means (Pridmore 2009). The first of these biological treatments in psychiatry, which aimed to initiate convulsions, was ‘malaria-induced fever’ to treat the psychological manifestations of syphilis, known as general paralysis of the insane. The second treatment was ‘insulin-induced coma and convulsions’, which was used to treat people with schizophrenia. The third was ‘camphor-induced convulsions’ which was used to treat schizophrenia and affective psychoses (Pridmore 2009). The fourth was electric shock (ECT), invented in 1938 and first used to treat schizophrenia (Shorter and Healy 2007). Out of these treatments, ECT’s popularity steadily grew after it was observed that it was safer and more effective than previous somatic treatments, and it was noticed that people with depression could benefit more than those with schizophrenia.

Until the end of the 1960s, the way in which ECT was used was as shocking as the name ‘shock therapy’ implied. In these early days clients might be ‘shocked’ in open, communal wards of psychiatric asylums, tied to beds, without anaesthetic or muscle-relaxing agents, often several times a week. Often patients would be given no clear reasons for treatment, proper assessment, follow up or official guidelines on treatment and oversight (Braslow 1997, Sabbatini 1998, Berg 2009). As a consequence, many of the patients who underwent ECT felt abused, oppressed, punished and damaged, all of which had a negative impact on the image of psychiatry in general.

Paternalistic approach
Philosophically this was a period of mechanistic approaches to the body and mind, and paternalistic approaches to medicine, with power vested in doctors and little input expected from their patients. ‘Scientists’ thought they had the knowledge and authority to treat ill and dysfunctional people, who then became passive recipients of the attentions of ‘experts’ and ‘wardens’.

Misgivings about ECT were highlighted in films, the most famous of which was One Flew Over the Cuckoo’s Nest in 1975. Since then there have been many others that have increased the public’s fears – some justified and some unjustified – and strengthened misconceptions (McDonald and Walter 2001).

The aftermath of the second world war, the destruction and the loss of faith in previously held certainties, as well as the growing pace of technological innovation, ushered in a time of social reform and philosophical realignment. Many believed that the medical profession, and psychiatry in particular, wielded too much control over peoples’ lives.

The dominant structures of health care were eventually redrawn towards consumer-centred and ‘biopsychosocial’ models, with the Universal Declaration of Human Rights putting human rights and personal autonomy at their core (United Nations 1948). With an increased sense of consumer empowerment, and knowledge becoming more easily accessible, the relativisation of psychiatric
power and authority continues. ‘Relativisation’ or ‘de-absolutising’ refers to making psychiatric authority less absolute, gradually less and less top-down directed, and more and more dependent on other professionals’ expert opinion, such as neurobiologists, nurses, lawyers.

Side effects and memory loss
The second, and perhaps most important aspect of ECT that has caused controversy, are the serious adverse cognitive side effects and memory loss experienced by a large minority of people after treatment. A systematic review of patients’ experiences by Rose et al. (2003) confirmed permanent memory loss in at least 30 per cent of cases. Robertson and Pryor (2006) acknowledged that amnesia, permanent or transient, is not the only common side effect of ECT; they suggest that memory disability (loss of working memory) and cognitive disability (loss of higher mental functions of cognition) to varying degrees, needed to be included.

The same authors explained problems associated with inaccurate use of terms such as ‘memory’ (specifying what ‘forgetting’ is and detailing autobiographical, retrograde, anterograde and working memory), ‘cognition’, ‘dysfunction’, ‘short term’ and ‘loss’, and tease out their meaning, urging clinicians not to use blanket terminology when describing their clients’ symptoms related to ECT.

Personal testimonies also reveal that ECT-related memory impairment is qualitatively different from that related to depression (Watkinson 2007). Robertson and Pryor (2006) claimed: ‘There is no evidence of a correlation between impaired memory/cognition after ECT and impaired mood, much less a causal relationship.’

On the other hand, Scott (2006) suggested that other non-memory side effects of ECT, such as those affecting general IQ, language, perception, manual dexterity and attention, ‘usually do not exceed the effects of depression, when modern methods of ECT administration... are used. Following ECT, these functions progressively improve. At one week to seven months after ECT, performance is better than before ECT, probably because of the alleviation of both the effects of depression and of ECT’.

Few long-term trials have been conducted to assess memory and cognitive side effects (National Institute for Health and Clinical Excellence (NICE) 2003) or ‘to determine when and if non-memory cognitive function normalises after ECT’ (Robertson and Pryor 2006, Sackeim et al 2007). However, it is apparent that different intensities of cognitive dysfunction follow different ECT techniques, varying according to bilateral or unilateral electrode placement, and brief or ultra-brief pulse width (Sackeim et al 2007, Loo et al 2008). Efforts to redress the lack of evidence must obviously continue.

Consent
The third element in the debate involves ‘informed consent’. In New South Wales (NSW), Australia, ECT can be administered only after ‘free, voluntary and written consent’ has been obtained (NSW Mental Health Act 2007) following an explanation of:

- The techniques to be followed.
- Possible discomforts or risks that can accompany treatment (‘including possible memory loss’), as well as the benefits.
- Appropriate alternative treatments that would benefit the person.
- The right to refuse or withdraw consent and discontinue the procedure.
- The right to seek legal and medical advice.

Under this legislation, the decision about whether the person has the mental capacity to give informed consent is made by the treating psychiatrist. If he or she is uncertain of this, the matter is passed to the mental health review tribunal (MHRT) to decide. For years this has been an important point in the controversy because, as the UK study of Rose et al (2005) had found:

- Half of the participants reported that they had not received sufficient information about the ECT procedure and the possible side effects.
- One third did not believe they had freely consented to ECT, even though they had signed a consent form.

Clinician-based studies concluded that these findings meant that patients trusted their doctors anyway, but recipient-based studies judged similar findings to mean that significant inadequacies existed in the informed consent process. Also, as Robertson and Pryor (2006) observed, neither the American Psychiatric Association nor the Royal College of Psychiatrists mention ‘non-memory cognitive after effects’ on their recommended consent forms.

Arguments about ECT revolve around legal concepts of discrimination, capacity, competence and freedom, and raise questions regarding when consent to treatment becomes invalid.
Involuntary treatment

The fourth factor in the ECT debate concerns the treatment of involuntary patients and their rights. According to the NSW Mental Health Act 2007, a person can be detained in a medical facility and deemed involuntary when a medical officer (or an 'accredited person', which does not include a mental health nurse in NSW) determines that the person is mentally ill or mentally disordered as specified in section 19 of the act.

Under the Act it is legal to 'care, treat and control' against the person's will, if 'necessary', 'on reasonable grounds' and for the 'best [clinical] interest' of the patient, in the 'least restrictive manner' available when other avenues of action are unavailable (sections 13 to 16).

In NSW, a magistrate's 'mental health inquiry' determines who can be classified as an involuntary patient and continue to be detained in a mental health facility after the initial five days, for a mentally ill person, or one day, for a mentally disordered person, following issue of the initial mental health certificate (sections 23-24 of the act). Subsequently, two medical practitioners – one of whom is a psychiatrist – can request ECT administration for an involuntary patient.

In NSW it is the MHRT that grants or rejects such a request and stipulates when and how many times ECT treatment can be given to that person (section 94). This decision is made if 'after considering the clinical condition and history of treatment of, and any appropriate treatment for, the patient, the medical practitioners are of the opinion that electroconvulsive therapy is: (a) a reasonable and proper treatment to be administered to the patient, and (b) necessary or desirable for the safety or welfare of the patient' (section 94).

The principal ethic of beneficence – that is, doing good to a person – overrides in this instance the ethical principle of autonomy (being free from external control or influence) for reason of the person's 'best interest'. As the law stands, ECT is still used to treat against their will people who are deemed involuntary patients by the legislation; and in many developing countries, clients are still treated without the use of anaesthetic or muscle relaxing agents and still lack power to challenge the psychiatric establishment. ECT treatments where anaesthetic and muscle relaxant agents are not used are known as 'unmodified ECT' (James et al 2009, Chanpattana et al 2010).

Rehabilitation

The fifth aspect concerns the lack of rehabilitation programmes for patients experiencing memory impairment or persistent adverse cognitive effects after ECT. Mangaoang and Lucey (2007) stressed the need for specific cognitive rehabilitation, the importance of baseline neuropsychological assessment before ECT and proper cognitive assessment after the completion of any ECT treatment course. The potential benefits of such a programme, which could allow individuals to recover and function as independently as possible, and to improve their quality of life, have been highlighted by Mangaoang and Lucey (2007). Techniques would include drill and practice exercises, compensation strategies and process training.

Robertson and Pryor (2006) claimed that the Mini Mental State Examination (MMSE), designed for dementia-specific assessment and used widely by psychiatrists to measure memory function in ECT users, is inaccurate in this situation. Instead, they recommended the Squire Memory Questionnaire (SMQ). Mangaoang et al (2004) suggested other tools, such as the Mundane Memory Questionnaire, Everyday Memory Interview, Adapted Autobiographical Interview and Memory Characteristic Rating Scale (Mangaoang et al 2004).

Until psychiatrists agree on the need for such programmes to help patients who are experiencing persistent cognitive difficulties, they will be denied this opportunity to fully rebuild their lives and regain trust in their doctors.

Unknown mechanisms of action

The sixth factor in the ECT debate relates to its unknown mechanisms of action. Grover et al (2005) admitted that ECT's mechanisms of action are unclear, although the treatment continues to be useful. Theories for ECT's efficacy include: 'psychological, neurophysiological, neurochemical, neuroendocrine and neuropeptide mechanisms' but 'there is no single theory that satisfactorily explains the mechanism of action of ECT in various psychiatric illnesses' (Grover et al 2005).

At first there were psychoanalytic theories, including fear theory, regression theory and punishment theory, and non-psychoanalytic theories, such as brain damage theory and amnesic theory.
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These were followed by the neurophysiological theories, which included anticonvulsive, antidelirium and neurogenesis theories, and neurochemical theories ‘postulating a deficiency of serotonin, norepinephrine or dopamine transmission in key brain regions’ (Grover et al 2005).

Lastly, there were attempts at explaining the effects of ECT by intracellular mechanisms, neuroendocrine factors, and melatonin and neuropeptide blood-brain levels, but all of these were inconclusive. Grover et al (2005) summarised their research as follows: ‘Although well established as safe and effective, some basic questions about ECT remain unanswered... Which of the myriad post-ECT biochemical alterations in the central nervous system and periphery, individually or in combination, reflect the therapeutic effect? And lastly, why and how does ECT alleviate signs and symptoms of both schizophrenia and major depression?’ This shows the magnitude of challenges facing researchers and practitioners.

What causes the cognitive effects?
The seventh issue is related to the previous point, namely that current science is unable to determine how adverse cognitive effects occur following ECT. According to Robertson and Pryor (2006), there are several possible causes of ECT’s adverse effects, which include: ‘Direct effects of electricity on the hippocampus; breach of the blood-brain barrier; increase in cerebral blood pressure; regional increases in T2 relaxation times; disturbance of the long-term potentiation mechanism; excessive release of excitatory amino acids and activation of their receptors; [and] decreased cholinergic transmission.’

There has been a lack of research into the effect ECT has on the executive function of the prefrontal cortex, which includes ‘working memory, logical thinking and abstraction, shifting of mental set, problem-solving, planning and organising’, all of which are ‘fundamental to organising one’s life and controlling behaviour’ (Sackeim et al 2000).

The scant evidence base does not increase public confidence in this treatment.

Disagreement on effectiveness
The eighth feature in the ECT argument involves the divergence of the views of clinicians and ECT users. As documentation shows, practitioners often focus on the effectiveness of treatment, the successful alleviation of disease signs and symptoms. Patients, however, prefer to speak of the overall benefits and disadvantages of treatment, taking into account not just relief of devastating symptoms of a particular disease, but also cognitive and memory function and quality of care received. The professionals seem to acclaim the good news of this powerful treatment, while the consumers often point to its negative consequences and uncertainties.

Overall, few collaborative studies that include the contribution of both these stakeholders have been conducted, adding to the fallibility of any possible final conclusions.

Disparity on standards
The ninth and final critique of ECT rests on the premise that ECT guidelines regarding standards of practice differ on important points depending on jurisdiction, revealing disagreements among experts in the field. This is seen in the differences between NICE (2003) guidelines in the UK and Australian ECT minimum standards of practice (NSW Government Department of Health 2010).

The NICE guidelines, which were updated in October 2009 but have not essentially changed, specify that treatment should be used to treat ‘severe depressive illness, a prolonged or severe episode of mania, or catatonia’, whereas the NSW guidelines allow patients experiencing major depressive episodes, mania, schizophrenia, schizoaffective disorder, catatonia, malignant neuroleptic syndrome and Parkinson’s disease to be given ECT.

Furthermore, NICE guidelines (tiny.cc/2341sw) allow for ‘advance directives’ to be written by clients, specifying their wishes for future action in the event of falling ill (for example, not to have ECT under any circumstances when they become incapacitated). However, no such provisions exist under NSW guidelines.

Concerning long-term treatment of specified diseases, NICE recommends that ‘because the longer-term benefits and risks of ECT have not been clearly established... ECT should not to be used as a long-term treatment to prevent recurrence of depressive illness’, and that it should ‘not be used in the general management of schizophrenia’. The NSW guidelines, on the other hand, permit continuation or maintenance ECT to prevent relapse of disease symptoms and recurrence of illness, respectively. In NSW, specific indications for continuation or maintenance ECT include recurrent depression, bipolar disorder and treatment-resistant schizophrenia.
Evidently NICE adopts a more cautious approach towards ECT, implying that, when used too widely, possible risks might outweigh possible effectiveness in a cost-benefit analysis. This clearly leans towards the side of ECT users, who call for ECT-use to be more restrained. The NSW guidelines are geared more towards the views of clinicians, whose main aim is to alleviate disease symptoms in spite of the cognitive risk factors experienced by ECT users.

Conclusion
As in the past, ECT is still a most complex intervention to untangle, so it is not surprising that it is difficult to maintain a balanced view, particularly since some questions remain unanswered. As a result of the debate, ECT is seen as the treatment of last resort, although some clinicians loudly contest this approach.

The following are suggested to help resolve this impasse, in addition to considerably more focused and rigorous research.

ECT education for clients and their relatives needs to be offered at various phases of the therapeutic encounter, and should include full and unbiased information before and after treatment.

If cognitive adverse effects result, rehabilitation based on neuropsychological assessment should be initiated and maintained, including counselling.

Clients’ families need to be involved and prepared to take on the burdens of rehabilitation outside the hospital setting, since no ECT rehabilitation programmes are available so far.

Staff involved with ECT treatment need to be educated about its history, indications, potential adverse effects, delivery techniques and recovery, and to strive for excellence of practice within guidelines.

Safeguarding clients’ rights and wishes, and understanding their concerns and perceptions of treatment, as well as treating their mental illness as effectively as possible, are paramount. Crucially, great effort should be made in the area of memory testing, minimisation of ECT’s adverse effects by the most appropriate techniques and medications, and choice in the type of ECT received as part of the informed consent process. These points aim to fight stigmatisation of those who receive ECT and experience mental illness. Whatever is said in the ongoing debate, and particularly while our understanding of the healing and transcending potential of the human brain/mind are still lacking, at the centre of the discussion remains the unique human person who is unwell.

References
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