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The Development of Electroconvulsive Therapy

Deborah Sevigny-Resetco

Electroconvulsive therapy (ECT), otherwise referred to as electroshock therapy, was first utilized as a treatment for schizophrenia in 1938 and its use has been surrounded by controversy ever since [1]. From the time this somatic therapy was introduced, it has been continually commended and criticized by both the scientific community and society as a whole. This paper will trace ECT from its origins in Rome to its integration in the United States; evaluating its development, as well as the contributions and the conflicts that accompanied it [2]. The brief history of ECT is as riveting as is it disconcerting; it is filled times of both rapid progress and stagnation. The effectiveness of ECT is evident in its success as a viable medical treatment however; simultaneously the implications of its misuse cannot be ignored. In an attempt to reconcile the ramifications of ECT with the benefits it has produced both in the past and to this day, this paper will juxtapose its successes and shortcomings throughout history.

In 1926, twelve years prior to the invention of ECT, Constance Pascal, a woman Parisian psychiatrist in France, introduced the term 'shock' into psychiatry. The meaning of this term for her arose from the idea that mental illnesses were caused by what she referred to as "mental anaphylactic reactions" and that shock could restore the brain and the autonomic nervous system [1]. Subsequently in 1933, a physician named Manfred Sakel was working with schizophrenic patients and developed what he referred to as "shock therapy" [1]. This idea echoed Pascal, but utilized insulin as the shocking agent to induce comas to restore the brain [1, 3]. After treating one patient with insulin shock therapy for three weeks with no improvement, one more injection of insulin induced an epileptic seizure so severe it had to be stopped by the administration of glucose. After the episode, when the patient's memory returned and the confusion diminished, it appeared his symptoms of schizophrenia had subsided. After four more weeks of treatment, the man was released and deemed *normal* [1]. With this new tie between epilepsy and schizophrenia, electroshock therapy was underway. In Genoa, Ugo Cerletti who had been studying the role of the hippocampus as a function of epilepsy (starting in 1931) learned of Sakel's discovery, began connecting it to his own research, and was inspired by a colleague Gaetano Vaile to use electricity to stimulate seizures. With the assistance of Lucio Bini, Ferdinando Accornero, and Mario Felici: Cerletti was able to refine his experiments of electroshock in dogs and by 1938 the team was prepared to treat their first human [3]. In April, a device built by the Acroni Company administered 80 volts for .25 seconds to the patient, however after three tries the man still retained consciousness. A week later, the experiment was retested on the same man, this time with 92 volts for .5 seconds: the patient lost consciousness. After eight minutes the patient regained full consciousness, was responsive, and had no memory of the treatment that had occur; the experiment had been a success [1].

From that point on, electroconvulsive therapy spread rapidly. ECT was introduced into the United States by one of Cerletti's follower's Renato Almansi [3]. In the U.S alone, within two years 7000 individuals had received ECT and by 1941 forty-two percent of U.S mental institutions had ECT machines [2, 3]. ECT began to evolve almost immediately after its introduction. There were four machines that developed; the classic alternating current, the controlled amperage alternating current, the unidirectional pulsating current, and the "brief stimuli" apparatus [3]. The diagnoses that

permitted ECT treatment increased from schizophrenia to later include involuntional melancholia, primary affective disorder, schizoaffective disorder, manic-depression, postpartum depression, severe depression, psychoneurotic paranoia, alcoholism, and even atherosclerosis [1, 4]. The potential positive effects of ECT had caused physicians to apply it nondiscriminatory to an array of diagnoses. Prior to this, Metrazol and insulin shock therapy were the only other somatic therapies, yet ECT was much more cost efficient (especially since there was an insulin shortage occurring in the 1940's) and considerably safer: by 1950 ECT was the only somatic therapy in regular use [1]. The known harms of ECT were limited to memory loss, temporary spatial or temporal disorientation, and bone fractures [1, 3]. Regardless of what the evidence revealed about its safety, effectiveness, or when taking into consideration the alterations made to minimize risk when using the machines (i.e. unidirectional current, alterations to electrode placement, decreased stimulation time) ECT in its early stages faced extreme skepticism from both the scientific community and society[3].

To begin with, during these years there was no shared belief as to how electroconvulsive therapy worked, much less how it affected with the brain: leaving room for its critics to pose their own assumptions. The unsupported belief that brain damage was inevitable in 'shock' therapy was not the only concern voiced. Many psychiatrists felt that the treatment was blatantly cruel, making the physicians appear to have a sadistic control over their patients [1]. Further, at the time, rules of informed consent were loose and there were times in institutions that ECT was implemented as punishment or to subdue unruly patients. Some even felt that the patients themselves were accepting the treatment as a sort of corporeal retribution [3]. One final concern of the patient's psychiatrists however, was that if they accepted ECT as anything but a last resort treatment, it directly undermined the psychological healing process by fixing a somatic problem instead of a subconscious one [1, 2]. As the psychiatric community began to speak out against the use of ECT, society's view of it shifted dramatically too.

From the cure all that it had originated as, ECT quickly lost hold of its momentum as its methods were called into ethical question. After World War II the number of individuals in need of mental care increased drastically, while at the same time President John F. Kennedy was urging for deinstitutionalization. This further resulted in changes in the funding of asylums and institutions as they changed to 'hospitals' which often were surrounded by bureaucratic red tape [1]. The amount of patients that needed care had surged just as the quality of the care was being cut and this resulted in what at times both appeared and actually was poor utilization of ECT on patients, either out of blatant negligence or lack of resources [3]. As if the realm of mental health was not suffering enough already in the public eye, ECT was being transformed by the media. Books such as One Flew over the Cuckoo's Nest and The Snake Pit created an exacerbated and horrifying image of how ECT was conducted [1]. Even though at this time muscle relaxants, sedatives, and general anesthesia were being used to monitor and control ECT procedures, the vivid portrayals the media was putting forth neglected to include this information [3]. The final social strife ECT would have to face was its apparent bias in regards to gender. The 1960's and 1970's were an essential time in the alteration of gender roles in society and unfortunately ECT was both empirically not gender neutral [2]. The proportion of women who received ECT over men drifted between 2:1 and 3:1 depending on the year [3]. This is thought to have resulted from

two double standards that existed within the mental health community. First, women were expected to be less capable of coping with mental stress or instability. Second, women were not generally released until both their symptoms subsided and they could return to their roles in the domestic sphere (whereas men just had to be symptom free) [2,3]. Due to these lapses, the movements against ECT were strongly supported and led to legislation such as the Supreme Court rulings of *Wyatt vs. Stickney* (this gave the right to refuse treatment), *Price vs. Sheppard* (this required a court hearing prior to ECT administration regardless of the patient's competence), and the legal regulations and limitations of ECT that were implemented in CA, NY, WI, MA, NC, and UT. The years of ECT's success were evidently hindered by the 60's and 70's, however there was a revival waiting happen [1, 3].

Despite the decline of ECT, it still used and remains in use in the U.S. today. Toward the end of the 1990's the mental health community was reevaluating the uses of ECT. At this point however, the application of ECT was narrowly redirected to treat types of depression [1]. During the decline of ECT, psychopharmacology has begun to grow and medications such as Chlorpromazine became the accepted treatment for psychosis [1]. Although there have also been developments in antidepressants drugs, ECT is still the most effective treatment for 'treatment resistant' depression [5]. One such example of this revival can be seen in the report written in 1999 by the U.S. Surgeon General that advocated "no controlled study has shown any other treatment to have superior efficacy to ECT in the treatment of depression" [1]. In recent years, the increased application of ECT has led to a renewed hope in its potential uses. The uses of ECT are expanding once again with positive empirical support for its effectiveness in treating personality disorders as well as potentially being reconsidered as a treatment of psychosis [4, 6]. The workings of electroconvulsive therapy to this day are still unknown, however it is possible that with developing technologies and an increased understanding of mental disorders, ECT may find new uses and continue to 'shock' society with its potential once again.

References

1. Shorter E, Healy D (2007) *Shock Therapy: A History of Electroconvulsive Treatment in Mental Illness*. New Brunswick: Rutgers University Press.
2. Braslow JT (1997) *Mental Ills and Bodily Cures: Psychiatric Treatment in the First Half of the Twentieth Century*. Berkeley: University of California Press.
3. Kneeland TW, Warren, CAB (2002) *Pushbutton Psychiatry: A History of Electroshock in America*. Westport, Praeger.
4. Wachtel LE, Jaffe R, Kellner CH (2011) Electroconvulsive therapy for psychotropic-refractory bipolar affective disorder and severe self-injury and aggression in an 11-year-old autistic boy. *Eur Child Adolesc Psychiatry* 20(3) 147-52.
5. Preston J, O'Neal JH, Talaga MC (1997) *Handbook of Clinical Psychopharmacology for Therapists*. Oakland: New Harbinger Publications
6. Kristensen D, Bauer J, Hageman I, Jørgensen MB (2010) Electroconvulsive therapy for treating schizophrenia: a chart review of patients from two catchment areas. *Eur Arch Psychiatry Clin Neurosci*. 261(6) 425-32.