Psychotherapy Guidebook

Electroconvulsive Therapy

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DEFINITION

Electroconvulsive Therapy (ECT), though not a system of psychotherapy based on psychological variables, is one of the oldest somatic treatments still in use for emotional illness. As currently used, ECT constitutes the electrical induction of a grand mal convulsion, or epileptic-like seizure in an individual generally anesthetized with an intravenous agent, as in a simple oral surgical procedure. This seizure without the use of muscle relaxant medication would be indistinguishable from that of a pathological seizure disorder, or epilepsy, manifested by an initial constant contraction of body musculature followed by rhythmic jerking movements of the extremities and a subsequent period of sleep and lethargy. Every human being is capable of experiencing a convulsion, although most individuals (i.e., nonepileptics) require a stimulus such as an exogenous electrical current to raise their central nervous system activity above a critical "seizure threshold" level. This does not, however, predispose the individual to the development of epilepsy. There are drugs that are capable of inducing seizures, but these have generally been abandoned for the use of electricity in contemporary practice. It is critical to note that although the individual experiences preanesthetic and anesthetic

drugs, electrical stimulation to the head, a convulsive seizure, and a period of somnolent recovery, the seizure is the only variable that has a positive therapeutic effect. Although the mechanism mediating therapeutic change is not thoroughly understood in terms of neurophysiology and biochemistry, there is an ever-increasing body of knowledge relating the physiologic effects of ECT to the biochemical abnormalities seen in certain psychiatric illnesses.

The efficacy of ECT is very well documented, primarily in affective illness (disorders of mood), especially depression. There are numerous studies demonstrating that ECT produces results that are equal to, if not better than, those produced by the antidepressant medications that are commonly used. Here we are referring to disorders with disturbances apparent in psychological and biological functions; that is, in addition to disordered mood, these individuals experience difficulty concentrating, disturbed sleep with frequent nocturnal awakenings and early morning insomnia, appetite and weight loss, constipation, decreased libidinous interest, psychomotor changes, and a characteristic daily variation of mood with increased depression early in the day. In illness such as this, an individual is markedly impaired and indeed at risk of death from not eating, and/or suicide. There is general agreement that such illness with very tangible biological dysfunction must be treated with somatic intervention and ECT has been so effective in the treatment of depressive illness that it has provided the standard against which the antidepressant medications have

been compared.

In many states, the use of ECT is felt to represent dramatic intervention and is relatively more strictly regulated than other somatic therapies. A careful review of the literature permits the conclusion that when properly performed in rationally selected cases, ECT is safe, effective, and at times lifesaving. Its widespread use in large institutions prior to the era of antipsychotic and antidepressant medication has contributed to some of the contemporary fears and concerns. As I will note, ECT is currently the beneficiary of increasingly rigorous research and careful modification.

HISTORY

ECT was first introduced in Italy in 1938 after prior work with injectible agents elsewhere in Europe. The original theoretical basis for this means of treatment was the mutual exclusivity of schizophrenia and naturally occurring epilepsy. Hence, it was believed that seizures held some prophylactic value against mental illness and could also represent a curative factor when introduced artificially. Electrically induced convulsive therapy was brought to the United States shortly after its European inception and became widely employed for varied types of psychiatric illness, particularly psychotic processes. Ironically, the originally noted negative relationship between schizophrenia and epilepsy has proven over time to be erroneous.

In more recent years, the use of ECT has been dramatically refined. When originally introduced, seizures were produced in awake patients by relatively crude apparatus. The patients would then convulse, often restrained by attendants. This rather dramatic and elementary form of treatment has left successive generations of patients, physicians, and public with a negative bias toward what is felt to be a harsh, if not brutal, form of therapy. This is unfortunate, for ECT in its modern form is no more traumatic than a minor surgical procedure under general anesthesia, as will be described below.

TECHNIQUE

After a thorough physical examination, laboratory examinations of the blood and urine, and X-rays of the spine to assess the patient's condition and ability to tolerate the procedure, he is taken to a facility with full medical equipment. Here the psychiatrist, often with the aid of an anesthesiologist, delivers a dose of short-acting intravenous anesthetic and a muscle relaxant that prevents the muscular contractions of the seizure. This does not interfere with the physiologic seizure activity in the brain so essential to effective treatment. Through electrodes held or attached to one or both temples, a pulse of 70 to 130 volts over an interval of 0.1 to 0.5 seconds is applied. Only a small amount of current actually passes the resistance of skin, muscle, and skull, but this is sufficient to produce a convulsion lasting approximately one

to one-and-one-half minutes during which oxygen can be applied through a facemask. The only external signs of the seizure are the twitching of eyelids or toes that reveal a successful induction. Nevertheless, the teeth are protected by a rubber or gauze bite block. The anesthesia wears off quickly, the patient recovers as from a nap, and is often on his feet within an hour of treatment. This can be repeated at varying intervals, usually three sessions per week for a total of six to twelve treatments. Multiple seizures in one session have been studied but are not widely used. This is in marked contrast to the often high number of treatments given in the past to chronically institutionalized patients and thus, side effects such as transient memory loss are less severe. In fact, some workers stimulate only the nondominant side of the brain and find even less memory impairment in some cases.

The risk of death with ECT is from 0.01 to 0.5 percent, increasing with age. This is of particularly low order when dealing with life-threatening illness, and it is minimized by proper medical and electronic monitoring of physiological functions. Complications can include all those of any general anesthesia, such as respiratory or cardiac difficulties, allergic reactions, and additional problems of dental injury, muscle strains, rupture of viscera, and post-convulsive confusion. These are particularly infrequent with modern application of treatment. The amount of current actually passing through brain tissue is small and there is no recorded incidence of structural brain damage. Memory disturbance and some degree of confusion occur frequently

and are almost always transient, generally clearing over a two- to four-week period. Cases of long-term memory dysfunction are extremely rare, and have never been definitively ascribed as resulting directly from ECT. The musculoskeletal complications, such as sprains, tears, and fractures, seen in the early days of unmodified ECT, are practically nonexistent with the use of muscle relaxants.

One risk, like that in the use of antidepressant medication, is that patients beginning to recover from a severe depression may become energized just enough to act on suicidal impulses. Though selected patients may be treated on an ambulatory basis, the severely ill are always treated during hospitalization. Particularly in the latter group but essentially with all use of ECT, the treatment is adjunctive and complementary to all other aspects of treatment, such as milieu therapy, individual and group psychotherapy, and pharmacotherapy. To the extent that a patient treated with ECT may be confused, other treatments are often strictly supportive until the confusion clears and additional therapy can be used to enhance adaptational coping, interpersonal relationships, and/or psychodynamic change.

APPLICATIONS

In contemporary usage, ECT is most widely indicated for the treatment

of depressive illness described above. It is particularly useful when the severity of nutritional debility or suicidal potential warrants a quick response to avoid the lag period found with the use of antidepressant medications. ECT is also effective in the immediate symptomatic treatment of manic excitement that is unresponsive to treatment with drugs. Schizophrenia is less dependably responsive but cases of catatonic excitement or withdrawal do respond dramatically. Schizophrenic illness that is resistant to treatment with drugs frequently responds, though it often requires a larger number of treatments.