

APPENDIX

Present Status of Electroconvulsive Therapy

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The state of art ECT requires thorough knowledge of its applications, indications, complications and, above all, its mode of action and how to use different machines to modify and alter the type of strength of stimulus versus unilateral or bilateral applications. ECT is considered to be a life saving measure as unipolar or bipolar depression may end in 15% of patients by suicide (Okasha, 1988).

Psychiatrists in developing countries deal with two-thirds of the world population of mental patients. ECT is applied more in the developing world for economical reasons and compliance, therefore, it is a must that psychiatrists in these regions should master the technique of ECT. It is the most potent armamentarium in the therapeutic tools of psychiatry.

To understand anesthesia, muscle relaxation, resuscitation and to have a trolley equipped with emergency treatments; to read the ECG and EEG in the new machines, makes ECT equivalent to the non-invasive techniques of diagnosis in surgery and medicine.

There is no controversy regarding the historical evolution of ECT, starting by convulsant therapy through camphor and cardiazole in 1933 and ending with the use of an electrical current in 1938.

The hypothesis behind convulsant

therapy proved to be wrong, as it was based on the incompatibility of schizophrenia and epilepsy, something which was proved by time to be rather common, with specific syndromes between the two disorders.

However, the efficacy of ECT stood the test of time for more than fifty years. There have been many studies as to the best method of application of ECT to minimize the side effects. Some claim that sine wave is better (Friedman et al., 1942; Lieberman 1948), but further studies showed that the pulse wave (Weiner, 1986) is better as the stimulus energy needed to induce a seizure is lower and at the same time the cognitive was abandoned without sufficient research.

To reduce the amount and duration of electrical current passing through the brain, many modifications have been attempted and it is agreed now that constant current is most suitable for a tissue stimulator because, with active regulation, both the voltage and the current can be precisely controlled within present limits. (Blanchy et al., 1973).

Also the duration of application of the current has been found to range from 1-5 seconds, however, clinically the range was narrowed to 0.5-2 seconds (Maletzky, 1989). As mentioned before, pulse wave reduced the amount of current needed to induce a seizure.

New machines are equipped with ECG and EEG, so convulsions can be monitored and minor fits can be discovered. It was found that 20%-30% of ECT given does not produce a convulsion of therapeutic effect (Okasha, 1993). An easier method to ensure the efficacy and duration of a fit is the cuff method (Fink, 1979). A cuff is put on one of the limbs and pressure is raised so as not to allow the passage of the muscle relaxation to that limb. On passing the current, the occurrence of the fit and its duration can be monitored from that limb.

A controversial point is whether ECT should be given unilaterally or bilaterally. Unilateral ECT was found to be associated with a lower current intensity to induce the seizure and the memory and cognitive impairment were less (Sachs and Gelenberg, 1988). Unilateral ECT is used mainly in depression and if no response is seen within 5-6 treatments the use of bilateral ECT is recommended (Price, 1981; Mc Allister et al., 1985). Bilateral ECT was found to be more effective in the treatment of mania (Weiner and Coffey, 1988) than unilateral ECT especially the newly termed dysphoric mania (Mc Elroy et al., 1992).

The most controversial issue is the mode of action of ECT, with theories ranging from the psychodynamic, cognitive, physiological, biochemical to the release of neurotransmitters from the hypothalamus responsible for the convulsion.

To release neurotransmitters, there is a decrease in the beta adrenergic receptor activity as a down regulation to the increased norepinephrine stimulation.

An increase in the dopamine is also found. A surprising finding is that there is an increase in the 5HT₂ receptor number and an increase in the 5HT₂ func-

tions, a finding which is opposite to what would be expected. There is a decrease in the level of acetyl choline and an up-regulation of the GABA-B receptors.

Concerning neuroendocrine response, there was a significant increase in prolactin, B-endorphine like ACTH, cortisol, FSH, LH, TRH, metaenkephaline and binding of opioid ligands.

Reviewing the indications of ECT, all the authors agree that its application in severe depression and psychotic depression with a recovery rate up to 85-90% as compared to neuroleptics and antidepressants 60%, neuroleptics alone 40% and antidepressants alone 20% (Weiner and Coffey, 1988; Sackeim, 1988; Okasha 1993). ECT was found to be very effective in cases of depression accompanied by delusions, suicide or melancholic depression. Zorumski et al., (1986) found that primary responded better to ECT than secondary depression.

Regarding unipolar versus bipolar depressed patients, Black et al., (1986) found ECT to be effective in both groups and failed to find a difference between them.

Biological factors like retardation, early morning waking, poor appetite, decreased sleep and diurnal variation were found to respond very well to ECT (Weiner and Coffey, 1988).

For mania, authors differ in their views. McCabe (1976) found marked improvement of 82% of patients that received ECT. Small et al., (1986) found that ECT does in fact appear to be more effective than lithium, but as Schou (1991) pointed out, lithium and ECT are not competitors but allies.

In a study by Mucherjee and Debikdar (1992) they stated that unmodified

ECT is associated with complete recovery in mania in 100% of cases.

Regarding schizophrenia, when ECT was introduced in the late 1930's it was mainly for schizophrenia. Studies by Salzman (1980), Small (1985) found that combined ECT and neuroleptics were better than either ECT alone or neuroleptics alone.

ECT was found to be most effective in catatonic schizophrenia, schizophreniform disorder and schizoaffective disorder (Weiner and Coffey, 1988). There have been mixed claims regarding its efficacy in paranoid schizophrenia.

ECT is given in other psychiatric conditions such as organic mental syndromes mainly for the control of the emotional and behavioral manifestations associated with the condition.

In particular, ECT has been used to manage the confusion, clouded consciousness, behavioral agitation and the disturbances of thought and mood characteristics of delirium. (Freeman, 1988; Maltezy, 1989). Chronic pain, eating disorder and obsessive compulsive disorder do not respond to ECT, however, the depressive symptomatology present in those disordered responds to ECT (Weiner and Coffey, 1988).

The role of ECT in the treatment of depression in the elderly is becoming an increasingly important topic given the present rising proportion of this age group. Kendall (1981) found that elderly patients tolerate ECT very well, often better than they tolerate tricyclic antidepressants and the efficacy of ECT is at least as good and possibly better in old age than in earlier decades.

In children, the use of ECT is now minimal, but there are a surprisingly

large number of accounts of its use in the literature during the 50's and 60's.

Use of ECT in children was reported by Bender (1947, 1955) to be useful in autism, childhood schizophrenia and depression, however, its uses in present day is minimal.

ECT was found to be one of the safest treatments during pregnancy with no side effects on the foetus (Wise et al., 1984; Dron 1985).

With recent ECT machines, better anesthesia and knowledge of the physiological effects of ECT on the body, it can be safely given to patients with concurrent cardiac disease, respiratory disease and porphyria (Bidder, 1981; Weiner and Coffey, 1988).

The use of ECT has extended outside psychiatry and very promising results have been found in the treatment of depression associated with Parkinsonism as well as motor aspects of Parkinson's disease, rigidity, tremors, bradykinesia, gait and postural stability (Douyon et al., 1989).

It has also been reported that ECT in grand mal epilepsy can raise the threshold for spontaneous (Ubaldo, 1992). It can be of use in terminating early status (Okasha, 1988).

Recently it has been reported that complete remission in patients with diabetes (non-insulin dependent diabetes with short history) who received ECT (Frakhr, 1980, Okasha, 1988).

A well trained psychiatrist should obtain the least side effects through the various modifications. Before anesthesia and muscle relaxants, the list of complications was enormous, that is how it obtained the title "shock treatment". The main side effects are memo-

ry and cognitive impairment which is completely reversible after a period of 6 weeks to 6 months. Memory impairment increases with high current intensity and with bilateral ECT (Sachs and Gelenberg, 1988).

Some people suggested that ECT may lead to the development of spontaneous seizures, however, this has not been proved (Sachs and Gelenberg, 1988).

Meldrum (1986) and Coffey et al., (1991) found no structural brain damage after ECT whether by neurotological examination, CT scan, MRI or auditory evoked potential. Now with modified ECT, the complications have diminished with emphasis on memory disturbances.

Against this can be minimized by giving unilateral treatment on the non-dominant hemisphere. Pre and post-oxygenation are essential all through the therapy Piracetam given intravenously 2-5 gm can help in reducing the memory deficit. (Ezzat et al., 1985; Okasha, 1993).

As long as the ECT is not accompanied by shock, the stigma of this treatment should disappear gradually. Orientation of colleagues and the public is very important, this can be implemented by mass media, T.V. and cinema. These sources have the greatest influence in forming the stigma of mental illness and ECT. To our present day, films are shown with shock treatment given as a punishment to the excited or patients non-responsive to drugs or psychotherapy.

A new era of information should be supplied and propagated by the mass media. Psychiatrists should play a major role in the education system through communication and objective efforts with the policy makers, emphasizing its safety, efficacy, mode of action, specific

indications and that it is a life saving measure and not a punishment or a last resort. A comparison of its safety compared to antidepressants and neuroleptics should be mentioned lightly, otherwise patients might also reject drug therapy.

During the campaign of education of the people, it is pivotal to attempt to change the name electroconvulsive therapy to a more descriptive and objective name that is compatible with its real action, like, brain synchronization treatment, rhythm restoration treatment, central stimulation treatment, neuronal stimulation treatment or cerebroversion (Rakhawy, 1982; Okasha, 1982; Fink and Tasman, 1992).

Lastly, all psychiatrists should be acquainted with ECT and be able to present the treatment to the patient and his relatives in a knowledgeable manner and not as a last resort treatment.

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