

Electroconvulsive Therapy and Its Effect on Memory

Memory



Although real ECT impaired concentration, short-term memory, and learning immediately after therapy, patient performance at 6 months was similar to that of a nondepressed control group.

Although electroconvulsive therapy (ECT) is used widely to treat severe depression, concern has been increasing about the possible adverse effects of such therapy. In addition to short-term cognitive defects, complaints of prolonged memory impairment and difficulty in concentrating have been noted in some studies. Because depressed patients may have memory deficits associated with their condition, it is difficult to assess possible ECT-induced changes in memory functioning relative to pretreatment levels. Moreover, memory deficits may indicate unrelieved depression and thus resistance to ECT rather than an adverse effect of the therapy itself.

In this study, Frith and associates at the Northwick Park Hospital in Middlesex, England, randomly assigned 70 patients with severe endogenous depression to either a standard course of eight bilateral electroconvulsive treatments ("real" ECT) or an identical course of anesthesia in which the shock was omitted ("sham" ECT). In this way, any differences between the groups could be unequivocally related to the shock and recovery from depression could be assessed as an independent factor contributing to alterations in memory performances. These authors also examined the correlation between mood and memory, i.e., depressed mood may suppress pleasant memories and enhance recall of unpleasant ones.

Mean age of the study group was 49.4 years (range = 30 to 69 yr). Fifteen patients had previously undergone ECT. Of the 52 women and 18 men, 62 completed the entire treatment course, i.e., two sessions per week for 4 weeks. Both groups received 1.5 mg/kg methohexitone, 0.6 mg atropine, and 0.5 mg/kg suxamethonium. In the real ECT group of 31 patients, bifrontal electrodes were used to pass 195 volts for 1.7 sec (dupulse waveform 1). To confirm the presence of a convulsion unmodified by the muscle relaxants, a blood pressure cuff was placed on the subject's arm and inflated to above arterial pressure prior to injection.

A control group consisted of 10 psychiatric clinic outpatients matched for age and sex. These subjects had no history of depressive illness and were suffering from mild anxiety, circumscribed phobias, and transitional situational disturbances.

All patients were queried before and after ECT and 6 months later about problems with memory or concentration. Memory assessment tests included concentration/vigilance, word list recall and recognition, learning labels for faces, and remote semantic and remote episodic memory evaluations. These tests were carried out before, during the course of, and 6 months after ECT and in some cases more often. The index of outcome was the percentage decrease in Hamilton depression ratings compared with pretreatment scores, as measured by psychiatrists who were unaware of the patients' allocation to the real or the sham ECT group.

Significant improvement was seen in 20 of the 31 patients who underwent real ECT, whereas only 11 of the 31 in the sham ECT group had a good outcome. It is possible that the 11 patients who had a bad outcome after ECT were actually resistant to this treatment and thus continued to be depressed.

When compared with the nondepressed control group, the depressed patients were impaired on a wide range of

tests that assessed memory and concentration before therapy, but their performance generally improved after ECT. The number of complaints about memory remained the same before and after treatment (either real or sham), but this number decreased at the 6-month followup examination. Although treatment did not affect complaints, outcome (i.e., good or poor recovery) had a significant effect in that patients whose depression was ameliorated had fewer complaints than did those who remained depressed.

Recall and recognition tests showed that depressed patients made more errors than the control group. Just after treatment the ECT group made more errors than the sham group, but by 6 months there were no differences between these two groups. Interestingly, in a task designed to measure remote memory, patients treated with ECT did better than the sham group, although this difference also disappeared at the 6-month follow-up assessment (see figure).

Therefore, ECT did have some immediate adverse effects: vigilance and word list recognition were impaired and learning was less rapid in the real versus the sham treatment group. However, after 6 months, results of testing showed no significant differences. No effects of any kind were seen as a result of manipulation of the affective connotations of words used in tests to correlate mood and memory. The subjective experience of memory problems appears to be a function of outcome rather than of treatment. In this study there was no evidence of long-term memory impairment after a single standard course of bilateral ECT except in those patients resistant to therapy whose depression was not relieved.

Abstract of Frith CD, Stevens M, Johnstone EC, Deakin JFW, Lawler P, Crow TJ: Effects of ECT and depression on various aspects of memory. *Br J Psychiatry* 142: 610-617, 1983.

history of suicide.

Furthermore, loss of a parent at an early age was significantly associated with suicide attempts.

Thus, a family history of suicide significantly increased the risk for an attempt at suicide in patients with a wide variety of psychiatric diagnoses, including schizophrenia, personality disorder, depressive neurosis, and unipolar and bipolar affective disorders. Further study is needed to elucidate the potential genetic factors involved in transmission of suicidal behaviors and the relationship between depression and suicide.

Abstract of Roy A: Family history of suicide. Arch Gen Psychiatry 40: 971-974, 1983.

Dr. Katz Comments:

This study by Roy makes a meaningful contribution to the growing body of work that has helped to delineate more clearly the epidemiology and natural history of suicidal behavior. His findings not only support the premise that a family history of suicide is a significant risk factor for future suicidal behavior but also underscore the fact that individuals with psychiatric disorders are inordinately vulnerable in this regard.

It has been well established that the presence of virtually any major psychiatric disorder increases the likelihood of suicide. In a previous study of 90 psychiatric patients who committed suicide, the same author found that one-third of the patients exhibited chronic schizophrenia and almost one-fifth recurrent affective disorders. More importantly, almost two-thirds of the patients were depressed and 44% were diagnosed as having a primary affective disorder (Roy: Arch Gen Psychiatry 39:1089, 1982).

Studying the relationship between suicide and psychiatric illness retrospectively, Robins and his associates found that in a consecutive series of 134 suicides, 94% exhibited psychiatric illness, with almost one-half suffering from an affective disorder (Am J Public Health 49:888, 1959). Other work has demonstrated that the likelihood of suicide is increased most in patients with bipolar affective disorders and to a lesser degree in unipolar affective disorders, drug abuse, alcoholism, and character disorders (Morrison: J Clin Psychiatry 43:348, 1982).

Early parental loss has been identified as a significant factor in increasing the likelihood of suicide. In the present study of 243 patients, a parent had committed suicide before the patient was age 20 in 42 cases and before age 11 in 12 cases. Loss of a parent in the first 10 years of life significantly increased the likelihood of a suicide attempt. In a controlled study of 98 attempted suicides admitted consecutively to the Christchurch Hospital in New Zealand, the incidence of parental loss was

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significantly higher among the patient group than among the control subjects. Separation and divorce were highly significant as predictors of future suicide attempts, but loss secondary to the death of a parent was not (Adam et al: Arch Gen Psychiatry 39:1081, 1982). These findings may be consistent with data indicating that parental deprivation is an important factor in predisposing an individual to future depression and the increased likelihood of suicide.

For the psychiatrist, a family history of suicidal behavior and the existence of a major psychiatric disorder are two clinical indicators that should raise suspicion about the possibility that the patient will attempt suicide. In a study of 4,800 patients consecutively admitted to the Houston Veterans Administration Medical Center, Pokorny identified the following factors as increasing the risk for future suicide attempts: a previous history of a suicide attempt, depression, being nonblack, being diagnosed as schizophrenic, having an affective disorder, alcohol or drug abuse, and having a marital status of other than married and living together (Arch Gen Psychiatry 40:249, 1983; reviewed in IRPD 2[3]:4, 1983). Women make four times as many suicide attempts as men, but men are successful four times more often than women.

Despite our present level of sophistication, it should be remembered that there is no absolute factor or group of factors that can predict suicidal behavior with certainty. It is significant, however, that 15% of patients with a major depression lasting longer than one month will commit suicide (Gye, Robins: Br J Psychiatry 117:437, 1970). □