

July 1955

Relation of Electroencephalographic Changes and Improvement in Electroshock

Therapy *

Max Fink, M.D.

Robert L. Kahn, Ph. D.

This study was undertaken as part of an investigation of the relationship between altered brain function and response to electroshock therapy. Twenty-four consecutive patients referred for EST were given EEG's prior to and at weekly intervals during and following the course of treatment. The total of 160 records so obtained were classified according to five criteria: the average percent time delta for three given lead combinations, the highest percent time delta at any one lead combination, the slowest delta frequency, the duration of the longest bursts and the highest delta amplitude. On the basis of the percentile scores obtained for each factor, the relative position of each record was determined. Those in the upper third of the distribution were considered to have high degree abnormality, while those on the lower third were low degree abnormality. By this method of analysis a definite correlation was found between improvement and the EEG rating. Of the improved patients, 25% showed a high degree abnormality after one week of treatment, 80% after two weeks and over 90% after three weeks. In the unimproved patients, however, none had a high abnormality record during the first three weeks and only one had such a record by the fourth week of treatment. A similar relationship was found for each of the EEG factors analyzed separately. The findings were confirmed in a subsequent investigation of 30 patients in which the EEG data obtained in the second and third week of treatment were used to prognosticate

improvement. It is concluded that early and persistent altered brain function, as determined by this method, is a necessary prerequisite for improvement after electroshock therapy.

* From the Research Service, Hillside Hospital, Glen Oaks, New York.

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July 20, 1955

Dr. Joseph W. Owen
52 East 91st Street
New York City, New York

Dear Doctor Owen,

It gives me pleasure to submit the following three abstracts of reports from the Hillside Hospital for presentation at the meetings of the New York Neurological Society.

The first, "Mobilizing Community Resources in Post-Hospitalization Planning for Psychiatric Patients", is a report of our experiences over the past few years in establishing an active relationship with community agencies. This report is written with the Director of the Social Service Department.

The second and third presentations are reports of studies on the mechanism of electroschock activities which are under investigation in our Research Service. Dr. Fink who is a co-author of these presentations, is a member of the Society.

I trust that they will meet with the committees approval and my best wishes for a comfortable summer.

Sincerely yours,

Joseph S. A. Miller, M.D.
Medical Director

MF:gw
Enclosures (3)

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Relation of Electroencephalographic Changes and Improvement in Electroshock Therapy *

7-12-55

Aug 13
Cerebral
sufficiency

Max Fink, M.D.
Robert L. Kahn, Ph.D.

This study was undertaken as part of an investigation of the relationship between altered brain function and response to ^{electroshock therapy} ~~E.S.T.~~ Twenty-four consecutive patients referred for EST were given EEG's prior to and at weekly intervals during and following the course of treatment. The total of 160 records ^{so obtained} were classified according to five criteria: the average percent ~~of~~ time delta for three given leads, ^{combinations,} the highest percent time delta at any one lead, ^{combination,} the slowest ^{delta} frequency, ~~and~~ ^{duration} the time of the longest ~~duration of~~ bursts and the highest ^{delta} amplitude, ~~of the delta waves.~~ On the basis of ^{the} combined percentile scores obtained for each factor, the relative position of each record was determined. Those in the upper third of the distribution were considered to have ^{relatively} a high degree of abnormality, ^{while those in the lower third were low degree abnormality.} By this method of analysis a marked correlation was found between improvement and the EEG. ^{rating} High abnormality ^{degree} was shown by ~~25%~~ ^{definite} 25% of the improved patients, after ~~only~~ one week of treatment, 80% after two weeks and over 90% after three weeks. In the ^{un}improved patients, ^{however} on the other hand, none had high abnormality ^{records} during the first three weeks and only one had such a record ^{by} the fourth week ^{of treatment}. A similar relationship was found ^{for} when each of the EEG factors ~~was~~ analyzed separately. The findings were confirmed in a subsequent investigation of 30 patients in which the EEG data obtained in the second and third week of treatment were used ^{for} ^{as} prognostic ^{or} ^{improvement} criteria. It is concluded that early and persistent altered brain function, as determined by this method, is a necessary ^{prerequisite} for improvement after electroshock therapy.

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From the Research Service, Hillside Hospital, Glen Oaks, N.Y.