PROGNOSIS IN SENILE DETERIORATION

By

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It is now generally conceded that slow wave activity tends to appear in the EEG as age advances. Attempts have been made with varying success to relate these slower rhythms to the presence of organic cerebral deterioration.

Two papers from this department—Robinson (1954), McAdam and Robinson (1956)—described a fairly homogeneous series of 50 patients over 65 years suffering from senile or arteriosclerotic dementia. A clinical rating scale was devised with which to estimate the level of deterioration in these patients. It was found possible to relate quantitatively the degree of intellectual deterioration to the amount of low-frequency activity in the EEG. The coefficient of correlation between the clinical rating and EEG rank order was $0 \cdot 79$ (P0·001) which is significant at the $0 \cdot 1$ per cent. level of confidence.

It was suggested as a result of these findings that the EEG might prove a prognostic indicator in such cases. This paper is a preliminary report on follow-up studies carried out on the same series of patients. It is confined to the 24 members of the original pilot study.

Four years have passed since the investigation was begun. All the patients discussed here have been followed up for between 3 and 4 years.

ORIGINAL ASSESSMENT

On the basis of the original clinical and EEG assessment it was found possible to divide the cases into three groups showing mild, moderate, and severe deterioration.

The standard required for inclusion in the mild group was "well orientated in all spheres. They showed only minor defects of both recent and remote memory. All knew their respective ages and how long they had been in hospital and showed a fair knowledge of the outstanding current topics of national and local interest. They were able to deal with simple arithmetical problems and some completed the Serial 7's Subtraction Test—almost all were engaged in productive activity." It was found that the EEGs of these patients showed the features of a normal record except that there was a slightly excessive output of low frequency activity which was inconspicuous and usually required special analyser apparatus for its detection.

Seven patients were included in this category on EEG rating. The "mild" clinical group was identical except for one patient who was relegated to the moderate group.

In the moderate group there was "poor orientation with marked memory defect and confabulation. Arithmetical ability was at the level of 'how many threepennies in 1s.?' The interview situation was fairly well appreciated and attention was well sustained. Most of them made spontaneous mention of their failing abilities." In the EEGs of this group the features of a normal record

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were obscured by low frequency activity although normally responsive alpha rhythm could still be revealed by the use of filters.

Ten patients fell in this EEG category. The clinical group had in addition the patient mentioned above.

With the severely deteriorated patients "only poor rapport could be established, replies were often vague and nonsensical. Spontaneous talk consisted of disjointed incoherent ramblings. They were incontinent (often doubly so) and had to be dressed and washed and sometimes fed. All were completely disorientated." Their EEGs showed continuous low-frequency activity and a completely disorganized record.

There was clinical and EEG agreement on the 7 patients who constituted this group.

FOLLOW-UP

Patients Graded "Mildly Deteriorated" on Clinical Rating Scale

There were 6 patients in this group. Of these 4 are still alive. One died 39 months after the original assessment and the other after only 6 months. It is noteworthy that the latter patient died from the effects of a fractured femur. Of her mental state it was recorded on the day of the injury: "Still fully orientated and showing no new signs of intellectual impairment." It may be speculated that had it not been for the accident her survival might have been comparable to the rest of the group.

When these 2 deaths are included the average survival rate for the group is at present (May, 1957) 37 months.

Patients Graded "Mildly Deteriorated" on EEG Assessment (7 Patients)

These consisted of the group above with the addition of one patient who was later discharged home and died there suddenly from a suspected cerebral thrombosis 6 months after the original assessment.

The average length of survival to date for this group is therefore 32·7 months.

Moderately Deteriorated EEG Group (10 Patients)

Of these only 2 are still alive. The first death occurred after only 4 months as a result of repeated "strokes". The rest occurred between 10 and 34 months. The present average length of survival of the group is 24 months.

Moderately Deteriorated Clinical Group (11 Patients)

This consists of the same 10 patients with the addition of the patient described in the "mild EEG" group. The average length of survival to date for this group is 22·6 months.

Severely Deteriorated Clinical and EEG Groups

As there was complete clinical and EEG agreement in this case the same 7 patients constitute both groups. All are dead. The average length of survival was 10 months.

	Present Average Length of Survival of Groups (in months)		
	Mild	Moderate	Severe
EEG rated groups	32·7	24	10
Clinically rated groups ..	37	22·6	10

COMMENT

It will be seen that the high degree of correlation between clinical and EEG assessments has so far been justified. Both have been successful predictors of outcome.

In rough figures the survival rates of the three groups have been: "Mild"—3 years, "Moderate"—2 years, "Severe"—1 year.

The clinical rating scale has proved only slightly more sensitive a prognosticator than the EEG.

At a later date it is intended to present results for the complete series together with a comparable series of depressives in the same age range.

BIBLIOGRAPHY

McADAM, W., and ROBINSON, R. A., *J. Ment. Sci.*, 1956, **102**, 819.
ROBINSON, R. A., *Old Age in the Modern World*, 1955, p. 433. (Report of the Third Congress of the International Association of Gerontology, London, 1954.) Edinburgh and London: Livingstone.