Electro-encephalographic investigations in myalgic encephalomyelitis

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Summary

The main EEG features are described of thirty-six young adults who were examined at the Royal Free Hospital between 1960 and 1964 and twelve children seen at the Hospital for Sick Children, Great Ormond Street, London, between 1957 and 1977. It is important in the future, if a plan is considered for the study of a fresh epidemic, to include systematic EEG studies covering a period of 2 to 3 years. The EEG alterations found in this limited survey, though modest, would suggest that cerebral function was disturbed with somewhat variable distribution by an insidious illness which has not yet been identified.

Introduction

It is with some diffidence that an attempt is now made to describe the main EEG features in thirty-six young adults and twelve children who presented clinically a somewhat insidious symptomatology consisting of malaise, sore throat, headache, pain in the muscles of the neck and particularly of the legs, dizziness, depression, nausea, and lack of initiative. Some of them were severely incapacitated. Muscular spasms were often observed involving discretely one or another limb and at times some patients complained of blurred vision, loss of memory, speech difficulties, poor balance and weakness in one or more limbs.

This somewhat complex symptomatology, where the subjective complaints were more prominent than the physical signs, has been discussed in the literature under various names and has occurred either in epidemic form or sporadically. It has been difficult both from the literature and from the discussions today to assess whether all the clinical phenomena described belonged to a single disease process with various degrees of severity, or to a number of different conditions of difficult classification. There is little doubt from today's symposium that further

discussion will occur in the future as to aetiology, main manifestations, prognosis, treatment and most of all about the correct identification of the syndrome.

In the forty-eight cases reported in this paper, the onset of symptoms was always indefinite and never acute, developing over a period of weeks rather than hours. Some patients mentioned that they had suffered from previous episodes with similar symptoms lasting some months. The thirty-six adult patients had EEGs between 1960 and 1964 (at the Royal Free Hospital, London) while the twelve children were seen at the Hospital for Sick Children, Great Ormond Street, London, between 1957 and 1977.

Methods

A uniform technique was employed in the electro-encephalographic studies using silver, i.e. silver chloride electrodes stuck on the scalp with collodion according to measurements from bony landmarks (Pampiglione, 1956). The criteria of normality were those accumulated from serial EEG studies on normal adults (unpublished data) as well as on children (Pampiglione, 1977) largely in agreement with the criteria expressed by Gibbs and Gibbs (1950) and Dumermuth (1965) bearing in mind differences in electrode placements and EEG montages. All the records were taken during the waking state and whenever possible also during somnolence and spontaneous sleep. A period of hyperventilation lasting 2-3 min was always attempted but several of the patients were unable to hyperventilate for more than one minute or so, soon complaining of 'painful fatigue' of the muscles of the neck of limbs or an increase in headache although there was no mention of pain in the chest. No tetanic phenomena were seen in any of the patients who succeeded in carrying out hyperventilation efficiently for a period of three minutes, nor myoclonic phenomena.

Photic stimulation was carried out towards the end of the test in each patient. No seizures occurred but on occasions odd movements of the limbs were seen in the form of some stiffening of one or the other limb muscles without involvement of the fingers or muscles of the face. No choreiform movements were seen.

Results and conclusions

All these cases had been referred by various colleagues who were, quite rightly, concerned about the patient's emotional state and felt that only a minimum of investigations should be carried out both during the period of florid symptomatology and/or during recovery. Only infrequently was it possible to carry out a second EEG at intervals of many weeks or months. This was the main reason for diffidence in presenting EEG data because it had not been possible to repeat the investigations at regular intervals as appropriately desirable in each case. In conversations with patients, however, it appeared that the EEG procedure was not causing distress and several adults were grateful for the efforts made to understand the underlying reasons for their 'feeling so poorly'.

The alterations in the brain waves (EEG) were moderate with an excess of irregular intermediate slow activity more prominent in one or another region without constant focal distribution. At times there was an excess of sharp components but no short duration spikes or complex wave forms were seen at any stage of the disease or after partial, or complete, recovery. The type and distribution of these relatively modest EEG abnormalities were substantially different from the EEG alterations more commonly seen either during an acute encephalomyelitis in any age group or during an acute toxic condition including marked alterations in water and electrolyte metabolism, in kidney or liver failure, or after the administration of drugs affecting the CNS. From the differential diagnostic aspects these EEG changes of moderate severity and patchy distribution were somewhat similar to those found

in the course of relatively mild forms of chorea, in the glandular fever syndrome without clinical evidence of cerebral complications (whether in adults or children) or in some adults with multiple sclerosis.

Such EEG alterations were clearly seen in forty out of the forty-eight cases studied (thirty adults and ten children) being more indefinite in the remaining eight cases. It seemed that in spite of individual fluctuations in the clinical state the severity of the EEG abnormality was not directly related to the severity of the individual complaints and clinical signs. However, as it has not been possible to carry out systematic EEG investigations with a prolonged follow-up of each patient, further comments appear unprofitable.

It will be important in the future, if a plan is considered for the study of a fresh epidemic, to include systematic EEG studies on a group of willing patients covering a period of 2-3 years. The EEG alterations found in this limited survey although modest, would suggest that cerebral function is disturbed with somewhat variable distribution by an insidious illness which is not yet identified.

The authors would be very interested to learn from the participants of today's symposium about isolated or, even better, systematic EEG observations carried out on either side of the Atlantic. They would also welcome any suggestion as to the possible reasons why the EEG alterations in this condition(s) should be so discrete and apparently not closely related to the severity of the clinical symptomatology.

References

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