MATTERS ARISING

Magnetic evoked responses elicited in the frontalis muscle

A recent paper by Kandler and Jarrat describes a method for eliciting magnetic evoked potentials (MEP) from the frontalis muscle by transcranial magnetic stimulation (TCMS). Comparison of MEP latency values in normal controls and patients with Bell’s palsy indicates that their prolongation beyond the normal limits predicts that functional recovery will be poor.

Evocation of MEP from the facial muscle by TCMS has been the subject of several recent studies, all of which have pointed to the possibility of eliciting responses similar to the blink reflex, especially from the superi- or muscles.2-4 Crucuciu et al have described TCMS-induced frontalis MEPS whose latency range differs from that of the R1 component of blink reflex.

We carried out a study in 5 healthy volunteers (4 women, 1 man) age ranged 26–38 years, to evaluate if the R1 response obtained following electrical stimulation of the supraorbital nerve showed statistical differ- ence in latency with the MEPS recorded in the frontalis muscle.

TCMS was supplied by a Cadwell MES-10 coil ID 9.5 cm; peak magnetic flux (cen- tre of coil) 2 Tesla. Optimum results were obtained with the coil centre 4 cm anterior to CZ (10–20 international system). Slight shifting was occasionally necessary to adjust to shall conformation and predict the response amplitude. Between 70% and 90% of the maximum flux capacity was delivered to the resting subject. Latency (defined as the interval between the beginning of the stimulus artefact and onset of the first component of the evoked muscle potential) was calculated with a Multibrain apparatus (Elema-Biomedica) from the average of at least four analysed and amplified responses (band- pass 200–1000 Hz).

A pair of Ag/Cl skin surface electrodes (cup diameter 10 mm) were used. The recording electrode was placed on the frontalis muscle, the reference electrode on the nasal bone. Both frontalis muscles were explored simultaneously.

The latency of the R1 and R2 compo- nents of the blink reflex was also evaluated by electrical stimulation of the right supraorbital nerve (figure). A blink reflex was always obtained. The mean (SD) ipsilateral R1 and R2 latencies were 10-52 (6-09) and 31-36 (0-77) ms respectively, that of the contralateral R1 and R2 was 39-6 (1-8) ms.

An early and a late bilateral response to TCMS were always observed (figure). Their latency times were: right 10-71 (0-64) and 30-92 (3-4) ms; left 10-62 (0-52) and 32-46 (4-4) ms. Student’s t test for paired data showed that there was no signifi- cant difference between these values and those of the R1 and R2 components of the blink reflex. The morphology of the two responses was also similar to that of these components. Short and long latency responses could be found for these values. Another possibi- lity is that TCMS excites the supraorbital nerve at the foramen, or that it activates the roots of the trigeminal nerve. An explana- tion would thus be found for the bilaterality of the early response obtained by TCMS and the comparable TCMS and electrical stimulation latency times.

Our data and responses obtained by TCMS in the frontalis muscle do not differ in latencies from those evoked with electrical stimulation of the supraorbital nerve in the same subjects. Therefore this response may well be induced by stimulation of the trigeminal nerve, rather than true MEP.

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Kandler and Jarrat reply
Cocita and Cassano’s method differs from ours in two important respects. First, they have used a larger coil. Current density varies directly with coil diameter and so they will have stimulated a wider area of the cortex. Secondly, they positioned the coil frontocentra1ly whereas we attempted to locate the coil over the frontal area of the cortex. It is therefore not surprising that they were able to record early and late trigeminal nerve responses in all normal subjects. That our method did not do so can be seen from our figure.

We recommend the use of a small diamet- er coil when trying to examine focal areas of the central nervous system with magnetic stimulation.


BOOK REVIEWS

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The title of this volume, the 7th in the series, is a misnomer. Only a single chapter, on molecular and clinical genetics in relation to psychiatric diseases can truly be said to address recent advances. The remaining 10 chapters cover disparate areas of clinical interest that range from suicidal behaviour in children and adolescents to a review of psychiatric aspects of the mouth and face. Furthermore, a whole chapter is devoted to a review of what are termed “key papers covering the years 1989 to 1990.”

This therefore is a book that cannot be recommended to readers wishing to keep abreast of recent developments in psychiatry. Perhaps a change of title that actually reflects the contents, such as Reviews of Current Clinical Practice in Psychiatry might be appropriate for future issues.

R J DOLAN


This book sets out to provide basic informa- tion and current thinking on the care of patients with spinal injuries. In general, the book suffers from the lack of proper trials of different forms of operative and non-operative treatment that prevails in
BOOK REVIEWS: Recent Advances in Clinical Psychiatry—7.

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