

Facial Paralysis

Ann Otolaryngol Chir Cervicofac. 1988;105(5):397-402.

[On the contribution of magnets in sequelae of facial paralysis. Preliminary clinical study]

[Article in French]

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This trial was designed to evaluate the efficacy of EPOREC 1 500 magnets as an adjuvant to rehabilitation following peripheral facial paralysis. Magnetotherapy is used in many other specialties, and in particular in rheumatology. The properties of repulsion between identical poles were used to decrease the effect of sequelae in the form of contractures on the facial muscles. There were two groups of 20 patients: one group with physiotherapy only and the other with standard rehabilitation together with the use of magnets. These 40 patients had facial paralysis of various origins (trauma, excision of acoustic neuroma, Bell's palsy etc). Obviously all patients had an intact nerve. It was at the time of the development of contractures that magnets could be used in terms of evaluation of their efficacy of action on syncinesiae, contractures and spasticity. Magnets were worn at night for a mean period of six months and results were assessed in terms of disappearance of eye-mouth syncinesiae, and in terms of normality of facial tone. Improvement and total recovery without sequelae were obtained far more frequently in the group which wore magnets, encouraging us to continue along these lines.

HNO. 1994 Sep;42(9):559-64.

[Does transcranial magnetic stimulation provide improved assessment of "idiopathic" facial paralysis? Initial results]

[Article in German]

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To evaluate transcranial magnetic stimulation (TMS) in patients suffering from idiopathic facial palsy, results from 31 patients were reviewed. TMS was applied to the facial nerve

by parieto-occipital, ipsilateral coil placement. At the time of the first examination (2-25 days after the onset of palsy), 11 of 31 nerves on the affected side were excitable by TMS. Patients were classified according to whether magnetic excitability of the facial nerve was possible (group I) or not possible (group II). In general, the percentage of patients with complete or nearly complete recovery of facial function was 97% following either a standard infusion therapy (corticosteroids, hydroxyethylstarch and pentoxifyllin) or orally administered corticoids (equal percentages in each group, respectively). In the first group of patients, 11 had facial nerves that were excitable with TMS and showed complete recovery of motor function within a median period of 7 weeks. In those patients with successful TMS only one experienced "crocodile tears" syndrome one year after Bell's palsy but without any further motor deficit of facial function. In patients with unresponsive nerve function following TMS 17 recovered without sequelae (median, 11 weeks), whereas 3 of 20 (15%) developed deficits of motor function. Two of these latter cases suffered from synkinesias (one that was slight after surgical decompression of the facial nerve and one severe) while one had facial contractures but without motor deficits.(ABSTRACT

Nippon Jibiinkoka Gakkai Kaiho. 1995 Sep;98(9):1416-25.

[Clinical investigation of transcranial magnetic stimulation of the facial nerve--an early prognostic diagnosis of patients with peripheral facial palsy and the facial nerve magnetic stimulation site]

[Article in Japanese]

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To obtain an early prognostic diagnosis of patients with peripheral facial palsy, a magnetic stimulator (Dantec Mag 2) was used to directly stimulate the intracranial portion of the facial nerve in 15 normal subjects and 108 patients with peripheral facial palsy. In normal subjects and patients with facial palsy, compound muscle action potentials (CMAPs) of the orbicularis oris muscle elicited by transcranial magnetic stimulation were compared with CMAPs elicited by electrical stimulation at a peripheral site of the stylomastoid foramen. This technique is similar to electroneurography (ENoG) and is regularly used in our department. In normal subjects, the latency of magnetically evoked CMAPs was longer (1.0ms, SD 0.39ms) than that of CMAPs evoked by electrical stimulation. There were two categories of patients; the first group consisted of patients who visited our hospital within 2 weeks after palsy onset with a record of electrically evoked CMAPs (ENoG) and magnetically evoked CMAPs, the second group consisted of all others. The first group was then divided into four subgroups based on minimal ENoG values obtained within 2 weeks after the onset of palsy. In patients, ENoG values declined until the seventh day after palsy onset, and then plateaued. However, the amplitude ratio of magnetically evoked CMAPs between the affected side and normal side showed no tendency to decline until the seventh day after palsy onset. Thus, whether

magnetically evoked CMAPs could be recorded must be discussed in relation to the prognosis of facial palsy. The patients in whom magnetically evoked CMAPs could be recorded within the seven days after the onset of palsy were classified into a group in which the minimal ENoG value was greater than 20%. These patients recovered almost 2 months after the onset of palsy, and were significantly better than the recovery rates of those patients in whom magnetically evoked CMAPs could not be recorded. The site at which the facial nerve is magnetically stimulated remains controversial. In patients with peripheral facial palsy, recovery of the stapedial reflex, blink reflex and magnetically evoked CMAPs were examined to investigate the site of magnetic stimulation. From the clinical perspective, the facial nerve is thought to be magnetically stimulated near the meatal foramen that Fisch reported the site of damage in Bell's palsy. This stimulation site was almost the same point as that calculated from the mean latency difference between magnetically evoked CMAPs and ENoG in normal controls.

Zh Nevropatol Psikhiatr Im S S Korsakova. 1997;97(3):32-5.

[Magnetic and electromagnetic stimulation in the combined treatment of patients with paralysis of the mimetic musculature]

[Article in Russian]

[Korotkikh NG](#), [Korz GM](#).

The original method of treatment of patients with postoperative paresis of mimic muscles was offered. The method included the use of two therapeutic factors: magnetotherapy and electromagnetostimulation of peripheral branches of facial nerve. The principles of combined influence of both components were described in detail. Data on functional control of treatment results confirm the reparation of peripheral branches of facial nerve.

Electroencephalogr Clin Neurophysiol. 1994 Apr;93(2):113-20.

Magnetic transcranial and electrical stylomastoidal stimulation of the facial motor pathways in Bell's palsy: time course and relevance of electrophysiological parameters.

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Facial nerve motor neurography was performed at various times after the onset of Bell's palsy in 97 patients. Stimulation of the facial nerve was performed (1) electrically in the fossa stylomastoidea (ElStim), and (2) magnetically in the labyrinthine segment of the facial canal (MagStim), evaluating different coil positions over the skull. Additionally, the face-associated motor cortex was stimulated magnetically in 47 patients (CxStim). A marked reduction of the amplitudes of the compound muscle action potentials (CMAP) evoked by MagStim on either m. nasalis or mentalis, or both, was observed which was

clearly more pronounced than the amplitude reduction to EIStim. This discrepancy occurred very early during the disease, the mean amplitude (expressed in percent of the amplitude on the unaffected side) being 82% (S.D. 9.1) for EIStim and 1% (2.7) for MagStim at days 0-4. It persisted for several months, often when facial nerve function had recovered to normal, as assessed by clinical observation, EIStim, and CxStim. This amplitude decrease to MagStim, which appears to be related to a locally enhanced stimulation threshold of the facial nerve, is a very sensitive and reproducible finding in Bell's palsy. It may prove specific of the disorder, of diagnostic value, and of interest in the follow-up of patients during treatment trials.

Eur Arch Otorhinolaryngol. 1995;252(6):344-7.

A comparison of transcranial magnetic stimulation with electroneuronography as a predictive test in patients with Bell's palsy.

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The aim of this study was to examine the neuronographic findings of electrical and transcranial magnetic stimulation of the facial nerve and to compare their ability to predict clinical recovery from idiopathic facial nerve palsy (Bell's palsy). Eighty-six patients were examined clinically and neurophysiologically immediately on presentation to Tampere University Hospital. Electroneuronography (ENoG) and transcranial magnetic stimulation (TMS) were performed 1-6 times for each patient. The time interval between each examination varied from 2 to 7 days. Seventy-eight patients were followed for a median period of 13 months after the onset of palsy. Facial nerve function was graded according to the House-Brackmann grading system. Relative amplitude differences of ENoG and TMS during the acute phase were then correlated with clinical outcome. Statistical analysis of the results showed that a TMS response elicitable during the first 5 days of the palsy was correlatable with a good prognosis. ENoG results correlated with clinical outcome at a later time from onset of symptoms. TMS was well tolerated and no adverse effects were seen. These results indicate that TMS is a useful method for the early prediction of outcome in patients with Bell's palsy.

Nippon Jibiinkoka Gakkai Kaiho. 1993 Sep;96(9):1410-6.

[Magnetic stimulation of the facial nerve]

[Article in Japanese]

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Intracranial activation of the facial nerve and the face-associated motor cortex are now possible with noninvasive magnetic stimulation techniques. Compound muscle action potentials (CMAPs) and the Blink reflex, in response to magnetic stimulation, were investigated. Subjects were 10 normal controls and 2 Bell's palsy patients. CMAPs were elicited in the orbicularis oris muscle by magnetic stimulation at the parieto-occipital skull and stylomastoid foramen. Furthermore, CMAPs were evoked by a magnetic coil oriented over the cortex. CMAP recording was possible with magnetic stimulation and the latencies of CMAPs at the parieto-occipital skull were slightly greater than those at the stylomastoid foramen. In 10 normal subjects, the mean onset latency following transcranial magnetic stimulation of the facial nerve at the parieto-occipital skull was 5.07 msec (SD = 0.40), while transcutaneous latency at the stylomastoid foramen was 2.77msec (SD = 0.539). In the blink reflex, R1 latency was 10.99 msec (SD = 1.27), ipsilateral-R2 latency was 37.46 msec (SD = 2.57), and contralateral-R2 latency was 38.925 msec (SD = 3.20). The blink reflex thus had a configuration similar to that evoked by conventional electrical stimulation. In the patients with Bell's palsy, CMAPs elicited by magnetic stimulation were of low amplitude with normal latency. However, in the blink reflex, only a contralateral R2 response could be recorded, and R1 and ipsilateral-R2 showed no response to stimulation at the affected side. Investigation of patients with Bell's palsy using this technique may therefore prove useful in the evaluation of peripheral facial nerve disorders.

Arch Ophthalmol (Paris). 1976 Aug-Sep;36(8-9):549-54.

[Eyelid magnets for facial paralysis]

[Article in French]

Marchac D.

The author presents his experience in the use of lid magnets. The positioning is delicate but tolerance is good and the aesthetic and functional result satisfactory. The essential indication is the development of corneal problems overnight from defective occlusion.

Klin Monatsbl Augenheilkd. 1976 Oct;169(4):529-33.

[A simple method of restoring lidfunction in facial nerve paralysis with permanent magnets (author's transl)]

[Article in German]

Momma WG, Biermann B.

This is a report on 8 cases of lagophthalmos due to paralysis of the facial nerve. The inability to close the eyelid may bring about severe diseases of the eyes. By implantation of

permanent magnets in the rims of the eyelids the dynamic lidfunction can be restored. We developed a very easy method implanting the magnets. The operation can now be done on out-patients. The results after 2 1/2 years' follow-up are presented