

Department of Rehabilitation Medicine

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General Summary

The main research topics of our department are as follows: 1) repetitive transcranial magnetic stimulation (rTMS) for stroke, 2) dysphagia, 3) traumatic brain injury, and 4) rehabilitation for children.

Research Activities

rTMS for stroke

1. Randomized, multicenter, comparative study of NEURO versus CIMT in poststroke patients with upper limb hemiparesis: the NEURO-VERIFY Study

The results of the 15-day rehabilitative protocol showed the superiority of NEURO (NovEl intervention Using Repetitive TMS and intensive Occupational therapy) relative to CIMT (Constraint-Induced Movement Therapy); NEURO improved the motion of the whole upper limb and resulted in functional improvement in activities of daily living

2. Brain perfusion and upper limb motor function: A pilot study of the correlation between evolution of asymmetry in cerebral blood flow and improvement in the Fugl-Meyer Assessment score after rTMS in chronic poststroke patients

Changes in the asymmetry index less than zero reflect improved perfusion, suggesting that the improvement of upper limb motor function in poststroke patients reflects the evolution of brain perfusion in the superior and middle frontal areas.

3. Continuous theta burst stimulation combined with intensive occupational therapy for upper limb hemiparesis after stroke: A preliminary study

The 15-day protocol of continuous theta burst stimulation combined with intensive occupational therapy is a safe and potentially useful method for treating upper limb hemiparesis after stroke.

4. Bilateral high- and low-frequency rTMS in patients with acute stroke and hemiparesis: A comparative study with unilateral high-frequency rTMS

Our proposed bilateral high- and low-frequency rTMS is safe and practical and showed a greater improvement of the Brunnstrom stage of the affected upper limb than did high-frequency rTMS. This novel rTMS approach may be a useful intervention for patients with acute stroke patients and hemiparesis.

5. Local injection of muscle with botulinum toxin type A synergistically improves the beneficial effects of NEURO in patients with spastic upper limb hemiparesis after stroke

The triple-element protocol of rTMS, intensive occupational therapy, and local injection

of botulinum toxin type A into spastic finger muscles is a promising therapeutic program for spastic upper limb hemiparesis after stroke.

Dysphagia

1. Functional magnetic stimulation using a parabolic coil for dysphagia after stroke
Functional magnetic stimulation with a parabolic coil can potentially improve swallowing function in patients with dysphagia after stroke.

2. Effect of early rehabilitation by physical therapists on the mortality of elderly inpatients after aspiration pneumonia

The data suggest that early rehabilitation by physical therapists was associated with a reduction in 30-day in-hospital mortality rates in elderly patients with severe aspiration pneumonia.

Traumatic brain injury

1. Characteristics of statistical imaging analysis in morphological and functional brain imaging of neuropsychological impairments and nonorganic mental disorders after traumatic head injury

Our results revealed several characteristics of statistical imaging analysis in functional and morphologic imaging of neuropsychological impairments and patients with nonorganic mental disorders after head injury.

Rehabilitation for children

1. Clinical efficacy of shoes and custom-made insoles in treating children with flatfoot

The walking pattern of children with flatfoot can be changed with the use of shoes with custom-modeled insoles. Unlike barefoot children, children who wore such shoes achieved increases in both walking speed and step length and decreases in the swing phase and the walking angle on both sides.

Others

1. Effects of testosterone levels on functional recovery with rehabilitation in stroke patients

Our data suggest that serum level of free testosterone have a positive effect on the discharge functional independence measure in men who have had a stroke.

Publications

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