Service Priorities and Programmes

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Application of Repeated Transcranial magnetic stimulation (rTMS) in stroke- a preliminary study

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Introduction

Non-invasive brain stimulation is the recent advances in medical therapy. Application of repeated Transcranial Magnetic Stimulation (rTMS) has been advocated to modulate brain excitability and thus promote recovery. The Physiotherapy Department of Princess Margaret Hospital (PMH) has launched a new stroke rehabilitation program for upper extremity integrating rTMS with intensive post-stimulation physiotherapy. This abstract reports the preliminary outcomes of this rehab program.

Objectives

Objectives: (1). To establish the safety usage of rTMS as a clinical modality in stroke rehab. (2). To evaluate the clinical efficacy of rTMS in treatment of hemiplegic upper extremity dysfunction.

Methodology

Stroke patients discharged from PMH were screened and consented for the program. Inclusion criteria were: Presence of moderate degree of upper extremity dysfunction and CT confirmed lesions at subcortical region within MCA territory. Those with previous surgery or implants in the head and neck region or have history of epilepsy were absolutely contraindicated. All patients received treatment for ten sessions: including 20 minutes of low frequency rTMS applied to contra-lesional motor cortex (M1) at a predetermined intensity, followed by 30 minutes of intensive physiotherapy neurological interventions for upper extremity. Outcome measures: Fygl Meyer upper extremity score (UEFM) and Box and Block test (BBT) were measured at four intervals: Before intervention, immediately after the first, fifth and tenth sessions of treatment. Patients were also examined for presence of any subjective discomfort during or after treatment at each follow-up

Result

Twenty one subacute to chronic stroke patients (Median days from onset 143 days [24.5, 217]; 8 Females, 13 Males; Mean age: 53.43 ± 8.25) completed the program between April 2014 and Dec 2015. No adverse responses or subjective discomforts

were reported. One way repeated measure ANOVA showed significant improvement in UEFM after 5 or 10 days of rTMS and in BBT after 10 days of rTMS ($p < 0.01$). Conclusion: The results of this preliminary study support other published evidence that rTMS is safe to use and is potentially effective adjunct to Physiotherapy for rehabilitation of stroke patients presenting with upper extremity dysfunction.