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◆RESEARCH ARTICLES

Effect of menthol application to the forearm on tactile sensation and Braille reading accuracy in persons with diabetes-induced visual impairment

Mayumi Nakada*1 Kenta Kiyomoto*2

*1 Department of Occupational Therapy, School of Health and Social Services, Saitama Prefectural University

*2 Division of Occupational Therapy, Faculty of Health Science, Japan Health Care College

Purpose of the study: To examine the effect of menthol application to the forearm on fingertip tactile perception and Braille reading accuracy in subjects with diabetic visual impairment. Study design: A repeated measurement controlled study. Methods: Researchers applied a topical menthol patch to the forearms of twelve vision-impaired people with diabetes. The arm the subjects used for reading Braille became the experimental arm and received the menthol patch. As a control, a placebo patch was applied to the contralateral side. Examination of sensory function both before and after application of both patches took place. Accuracy of Braille identification was recorded. Results: After application of menthol patches, tactile threshold on the forearm increased significantly. Researchers observed improved tactile gnosis/discrimination of fingers. Accuracy of Braille identification also improved. Conclusion: This study suggests that application of menthol to the forearm of diabetic persons with vision and tactile sensory problems is a helpful adjunct to facilitate the ability to read Braille. Further methodological studies and studies to investigate the cortical mechanisms are needed.

Key words: Diabetes, Blind, Menthol, Braille, Topical cutaneous anesthesia

Influence of attention disorder of cerebrovascular disorder patients on rehabilitation at a convalescence rehabilitation ward

Fumio Sakimoto*1, *2 Mizuho Fujiwara*3 Junpei Oba*3

*1 Student at Graduate School of Integrated Rehabilitation Studies, Kobegakuin University

*2 Department of Rehabilitation, Kobe Rehabilitation Hospital

*3 Department of Rehabilitation, Kobegakuin University

We investigated the effect of attention disorder on returning home of patients with cerebrovascular disorders who were admitted to convalescent rehabilitation wards. The subjects were patients suffering from cerebrovascular disorders who were admitted to the rehabilitation ward in a cooperative research hospital. After excluding some of the subjects, we investigated 90 people. After classifying subjects into two groups: the home group and non-home group, the two groups were compared. In addition, four factors were considered: attention disorder, FIM-M, presence of an outgoing person and the absence of an outgoing person. The results recognize significant differences in age, hospital stay, HDS-R, MMSE, TMT, and FIM. In addition, an FIM-M score of 70 points or more was considered as a borderline for returning home, and in cases of a decrease of FIM-M, various factors including caution failure may be intertwined in a complex way.

Key words: Cerebrovascular accident, Attention disturbance, Home, Convalescent rehabilitation wards

Characteristics in driving evaluation and factors influencing resumption of driving for unilateral spatial neglect patients undetected by Behavioral Inattention Test: A case study of three patients

Tasuku Sotokawa*1, *2 Takuya Murayama*2 Takuya Sato*2 Yoko Sakimura*3

*1 Department of Occupational Therapy, Faculty of Medical Technology, Niigata

University of Health and Welfare

*2 Department of Rehabilitation, Niigata Rehabilitation Hospital

*3 Department of Rehabilitation Medicine, Niigata Rehabilitation Hospital

The aim of this study was to find the behavioral characteristics in the driving evaluation and the factors related to resumption of driving through analysis of driving evaluations in three patients with mild- unilateral spatial neglect (USN). Based on the Behavioral Inattention Test (BIT), the patients had no signs of USN; however, the characteristics of driving behavior, such as poor lane position, running off the left side of the lane, and right side vehicle rubbing, were observed during driving simulation and on-road driving. For the patient who resumed to drive in re-evaluation, the improvement of self-awareness for his driving performance was observed, and in addition, the improvement of his generalized attention can complement his directed attention. When evaluating driving in patients with mild USN, we should not only focus on the possible presence of USN but also evaluate associated problems such as generalized attention and self-awareness by using driving simulation and on-road driving.

Key words: Driving, Unilateral spatial neglect, Attention, Behavioral Inattention Test, Self-awareness

The relationship between the disability perception gap in individuals with higher brain dysfunction and the burden of caregivers who participated in the group program organized by Gunma Prefecture

Yosuke Takahashi *1 Bumsuk Lee *2 Fusae Tozato *2

*1 Gunma Prefectural Rehabilitation Center for Persons with Disabilities

*2 Graduate School of Health Sciences, Gunma University

The purpose of the study is to clarify the relationship between the perception gap in executive dysfunction in individuals with higher brain dysfunction (HBD) and their

caregivers and the caregiver burden. We have conducted group programs such as recreation and short lectures eleven times in eight months for eight individuals with HBD and the seven caregivers residing in Gunma Prefecture. They were evaluated by the Dysexecutive Questionnaire, the Japanese version of the Zarit caregiver Burden Interview (J-ZBI), and the behavioral changes in the program. As a result, the perception gap between individuals with HBD and the caregivers with respect to severity of executive dysfunction was identified, and the gap was highly correlated with Role strain scores of J-ZBI. The results suggest that it is necessary to increase the frequency of implementation of the group program and to deepen the understanding of disabilities for both individuals with HBD and their caregivers.

Key words: Higher brain dysfunction, Group, Caregiver burden, Longitudinal study, Dysexecutive Questionnaire

◆PRACTICAL REPORTS

Functional improvements of chronic severe upper limb hemiplegia by Repetitive Facilitation Exercise in a child with acquired cerebral hemorrhage

Wakako Yorozuya * Kenta Hayashida * Katsuyoshi Setsu * Fumitada Hattori *

* Nagao Hospital

Repetitive Facilitation Exercise is a grade B therapy recommended in the 2015 Japanese Guidelines for the management of stroke. However, no reports have described its application or therapeutic effect in pediatric cases. We report on a 7-year-old female child with severe hemiplegic limb following acquired cerebral hemorrhage. Treatment with Repetitive Facilitation Exercise was initiated one year after onset. We were able to reduce paralysis of the upper limb, promote functionality and strengthen her upper limb use during activities and play peculiar to young children. On Ueda's 12-grade motor function test, the function of her upper limb and fingers improved from 6 to 10 and 1 to 5, respectively. Repetitive Facilitation Exercise is

expected to improve functional plasticity after stroke in both adults and children. We strongly recommend that children with stroke receive high quality therapy as soon as possible. Furthermore, a medical system and framework for long-term therapy should be established in parallel with school enrollment and/or return to school.

Key words: Stroke, Child, Repetitive Facilitation Exercise, Hemiplegia, Dystonia

Modified Constraint-Induced Movement Therapy in the development of rehabilitation programs in a day-care center for a post stroke patient:

A case study

Yusuke Masuda *1 Kaoru Honaga *1 Hikaru Matsunaga *2

Ken Suzuki *2 Kunitsugu Kondo *1

*1 Tokyo Bay Rehabilitation Hospital

*2 Yatsu Kyotaku Service Center

Constraint-Induced Movement Therapy is useful rehabilitation for post stroke patients. However, due to the difficulty of applying this method in the Japanese nursing insurance system, we made the modified Constraint-Induced Movement Therapy (mCI) system, which could be used in day-care centers. This case report shows the effectiveness of mCI for day-care patients. We applied the mCI to a 70-year-old woman who suffers from right hemiparesis after stroke and came to the day-care center after being discharged from the hospital. She participated in the mCI program for two months, which consisted of Task-Oriented Training (TOT) with Transfer Package (TP) (1.5 hours/day, 2 days/week). We assessed her using the Fugl-Meyer Assessment, Motor Activity Log and Simple Test for Evaluating hand Function before and after intervention. Immediately after intervention, each score improved significantly, exhibiting continuous improvement up to 1 year after intervention. The mCI had her paretic hand participate in activities of daily living, which improved practical use of her paretic hand. This case report suggests that the mCI in day-care centers might be effective for the hemiparetic patients with stroke.

Key words: Upper extremity function, Evidence, Changing behavior, Hemi paralysis,

Case study

Clinical utility of a new functional splint made of thermoplastic knit material for thumb carpometacarpal osteoarthritis

Shuichi Sasaki *1, *2 Kenji Onuma *3 Tomonori Kenmoku *3
Koji Sukegawa *3 Masashi Takaso *3 Naonobu Takahira *4

- *1 Department of Rehabilitation, Kitasato University East Hospital
- *2 Graduate School of Medical Sciences, Kitasato University
- *3 Department of Orthopaedic Surgery, School of Medicine, Kitasato University
- *4 School of Allied Health Sciences, Kitasato University

Splints for carpometacarpal (CM) joint osteoarthritis are designed to reduce joint inflammation by stabilizing both CM and MP joints. We have developed a new type of splint, the Kitasato Thumb Splint (KTS), which corrects the position of the CM joint while keeping the MP joint mobile. KTS is made of low-temperature thermoplastic material, and made by occupational therapists to correct dislocation and/or deformation of the CM joint. The KTS is unique in that it draws the first metacarpal bone toward radius, stabilizes the thumb in an abducted position, and does not fix proximal phalanges, allowing the MP joint to extend fully. To evaluate the effectiveness of KTS, two hands with CM joint osteoarthritis (Eaton stage I, III) were X-rayed to compare the thumb extension and pinch with and without KTS. Without KTS, subluxation of the CM joint and overextension of the MP joint were observed at the resting position, and subluxation was even worse at thumb abduction and pinch movement. However, with KTS, subluxation was corrected and the overextension of the MP joint decreased at the resting position, as well as during thumb flexion/extension and pinch movement. KTS was shown to be a unique orthosis allowing MP joint movement and correcting CM joint alignment even during movement.

Key words: Orthotics, Splint, Thumb, Pain, Thumb carpometacarpal osteoarthritis