

Abstract – WCN 2013**No: 2812****Topic: 10 – Neurorehabilitation****Impact of soft-tissue-shortening on goal achievement in patients treated with botulinum-toxin a (BONT-A) for post-stroke upper-limb-spasticity (ULIS-2 study)**

S. Ashford^a, K. Fheodoroff^b, J. Jacinto^c, L. Turner-Stokes^d. ^aPalliative Care, Policy and Rehabilitation, King's College London, Northwick Park Hospital, Regional Rehabilitation Unit, London, UK; ^bGaital-Klinik, Hermagor, Austria; ^cCentro de Medicina de Reabilitação de Alcoitão, Estoril, Portugal; ^dSchool of Medicine, King's College, London, UK

Background: Soft-tissue-shortening (STS) is a common long-term sequel of upper-limb spasticity (ULS) affecting different levels of functioning if not treated appropriately.

Objective: To describe the impact of STS on goal achievement in different goal areas in patients after BoNT-A treatment of ULS.

Patients and methods: Analysis of primary goal achievement in relation to STS in adults with post-stroke-ULS within an observational, prospective cohort study on current practice in an international, multi-center design (84 centers in 22 countries: ULIS-2).

Intervention included one cycle of BoNT-A treatment and concomitant therapy in accordance with routine local clinical practice.

The presence of soft tissue shortening was defined as severe restriction of passive range of motion (pROM) in at least one segment (shoulder, elbow, wrist, hand).

Results: 340 (74.5%) patients had no STS and 116 (25.5%) presented STS in at least one segment.

If STS was present, goals related to pain control (87.5% with STS versus 81.1% without STS) and ease-of-care (87.5% with STS versus 84.8% without STS) were more often achieved.

A higher proportion of patients without STS achieved goals in active function (73.9% without STS versus 58.3% with STS), maintaining/improving pROM (83.3% without STS versus 63.0% with STS) and reduction of involuntary movements (84.4% without STS versus 55.6% with STS).

Conclusions: Goals related to pain control and ease-of-care were more often achieved in patients with STS, whereas a higher proportion of those without STS achieved goals in active function, improved pROM and reduction of unwanted involuntary movements.

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Abstract – WCN 2013**No: 2779****Topic: 10 – Neurorehabilitation****Functional diagnosis of brain function in patients with severe chronic disorders of consciousness**

S.M. Golaszewski^{a,b,c}, M. Seidl^{a,b}, K.R. Frick^a, A.B. Kunz^{a,b}, S. Leis^a, M. Kronbichler^c, J. Crone^a, R. Nardone^{a,d}, E. Trinka^a, F. Gerstenbrand^b. ^aDepartment of Neurology, Paracelsus Medical University, Christian-Doppler-Klinik, Salzburg, Austria; ^bKarl Landsteiner Institute of Neurorehabilitation and Space Neurology, Vienna, Austria; ^cNeuroscience Institute, Salzburg, Austria; ^dDepartment of Neurology, Franz Tappeiner Hospital, Merano, Italy

Background: Recent research showed that some patients with severe chronic disorders of consciousness (SC-DOC) have partially higher brain functions and therefore a certain level of residual consciousness, which cannot be assessed by clinical examination. Functional MRI was discovered as a possible additional tool to the clinical examination.

Objective: The aim of this study is to investigate, if clinical testing evaluations using the Coma Recovery Scale-Revised (CRS-R) and the

Wessex Head Injury Matrix (WHIM) and a so-called "Own-name-paradigm" have similar results in differentiating between these two states of severe chronic disorders of consciousness, namely the minimally conscious state (MCS) and the unresponsive wakefulness state (UWS).

Material and methods: Twenty-six patients with SC-DOC were assigned into the 2 states according to detailed clinical examination and by CRS-R and WHIM. Using an event-related fMRI paradigm, the brain activity during a sentence (for example "Martin, hello Martin") with the own name or another name was investigated. Afterwards in 7 previously defined regions of interest (ROI) the results of the patients were compared with the activation in healthy subjects.

Results: According to the clinical examination and the testing, 19 UWS and 7 MCS patients were diagnosed. In 17/19 UWS patients and in 5/7 MCS patients activations similar to these of healthy subjects were found. In both groups only 2 patients showed no activation in the 7 ROIs.

Conclusion: It could be demonstrated that there is a higher brain function in diagnosed UWS patients. We believe that the fMRI is an important tool to reconsider the diagnosis.

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Abstract – WCN 2013**No: 2784****Topic: 10 – Neurorehabilitation****Neuromodulation of the sensorimotor cortex by vibration stimulation of the whole-hand**

S.M. Golaszewski^{a,b,c}, M. Seidl^{a,b}, A.B. Kunz^{a,b}, M. Christova^d, K. Schwenker^a, L.-S. Koenig^a, R. Nardone^{a,e}, E. Trinka^a, F. Gerstenbrand^b. ^aDepartment of Neurology, Paracelsus Medical University, Christian-Doppler-Klinik, Salzburg, Austria; ^bKarl Landsteiner Institute of Neurorehabilitation and Space Neurology, Vienna, Austria; ^cNeuroscience Institute, Salzburg, Austria; ^dInstitute of Physiology, Medical University Graz, Graz, Austria; ^eDepartment of Neurology, Franz Tappeiner Hospital, Merano, Italy

Background: It has been recently shown that 20 min of mechanical flutter stimulation induces lasting motor cortical excitability changes, as assessed by transcranial magnetic stimulation in relaxed hand muscles.

Objective: The present functional magnetic resonance imaging (fMRI) study aims to examine if such neuromodulatory changes are reflected in the BOLD signal during a motor test.

Materials and methods: Two groups were recruited: one group receiving whole-hand flutter stimulation with a frequency of 25 Hz (FSTIM group, n = 22) and a second group receiving no stimulation (NOSTIM group, n 22). As motor test finger-to-thumb tapping was performed to activate a wide sensorimotor network during the fMRI measurements. Three fMRI measurements were obtained with this test: before stimulation (PRE), after stimulation (POST1), and 1 h after stimulation (POST2). Three regions of interest (ROIs) were defined: primary motor area (M1), primary somatosensory area (S1), and supplementary motor area. In the absence of baseline differences between both groups, the FSTIM group showed increased movement-related brain activations compared with the NOSTIM group, both at POST1 and POST2.

Results: ROI analysis revealed increased blood-oxygenation-level-dependent (BOLD) responses within contralateral S1 (p20%) and M1 (p25%) at POST1, which lasted until POST2. These poststimulatory effects within S1 and M1 obviously reflect neuroplastic changes associated with augmented cortical excitability.

Conclusion: We could demonstrate neuromodulation of the sensorimotor cortex by vibration stimulation of the whole-hand that can be

applied as a pre-conditioning of the sensorimotor cortex for a consecutive motor therapy to improve outcome in neurorehabilitation.

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Abstract – WCN 2013

No: 2735

Topic: 10 – Neurorehabilitation

Modulation of cortical plasticity by whole-hand electrical stimulation in attempt to improve hand motor functions after stroke

L.-S. Koenig^a, M. Christova^b, K. Schwenker^a, H. Bartsch^c, G. Luthringshausen^c, E. Gallasch^b, A.B. Kunz^a, M. Seidl^a, E. Trinka^a, S.M. Golaszewski^a. ^aDepartment of Neurology, Paracelsus Medical University, Christian-Doppler-Klinik, Salzburg, Austria; ^bInstitute of Physiology, Medical University Graz, Graz, Austria; ^cNeuroCare Rehabilitation Center, Salzburg, Austria

Background: Peripheral electrical stimulation has been proved to modulate cortical plasticity in healthy and in patients. Such effects also occur after application of electrical mesh-glove stimulation (MGS) in our previous studies on healthy subjects.

Objective: The effect of whole-hand electrical stimulation on motor recovery in stroke patients at the subacute stage is examined.

Materials and methods: Patients with cortico-subcortical stroke and predominantly motor hemiparesis of the upper extremity were recruited. MGS was applied on the paretic hand daily for 60 min before the standard rehabilitation training over three weeks. Hand motor and sensory functions were evaluated with Wolf Motor Function test, Fugl-Meyer Assessment score, Nine-hole-peg Test, and Semmes-Weinstein monofilaments. Single and paired-pulse transcranial magnetic stimulation (TMS) were applied to evaluate the corticospinal excitability changes over the treatment period. Further, functional magnetic resonance imaging (fMRI) was conducted to assess the cortical brain reorganization changes after the treatment. Effects of MGS were compared to a control group receiving sham stimulation.

Results: Patients from both groups showed significant functional improvement as assessed with the motor functional tests. The improvement for the MGS group was increased compared to the control group. These functional effects correlated with neuroplastic changes within the sensorimotor area as revealed by TMS and fMRI.

Conclusion: Electrical stimulation applied before a physiotherapeutic training raises the motor cortical excitability in the lesioned cortex so that the subsequent training becomes more effective. The obtained results provide better understanding how modulation of central motor controlling structures by somatosensory stimulation correlates with functional motor recovery.

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Abstract – WCN 2013

No: 2767

Topic: 10 – Neurorehabilitation

Neurological bladders disorders: Clinical and urodynamic aspects

N.S. Diagne, K. Belhaj, A. Nait Khachat, A. Khadir, S. Lahrabli, F. Lmidmani, A. El Fatimi. Department of Physical Medicine and Rehabilitation Functional Chu Ibn Rochd, Casablanca, Morocco

Introduction: Therapeutic of neurological bladder need an Urodynamic exploration. It's prevented urinary complications.

Objectives: Our objective was to determine the Urodynamic exploration aspects to patients with neurological bladder.

Patients and methods: We conducted a retrospective study in Rehabilitation department of teacher hospital of Ibn Rochd (Morocco). Patients with neurological bladder who benefited a complete Urodynamic exploration between October–March 2013 were included. Urinary disorders which can be explicated for organic urinary lesions were excluded. Biographic, urinary symptoms, results of neurological exams and Urodynamic exploration were noted.

Results: We included 55 folders of patients. Patient aged under 15 year at 54, 5% of case. Women represented 56, 4%. Urinary disorders were low voiding jet (30.9%), urinary hesitation (20%), incomplete draining (18.2%), enuresis (7.3%), and urinary incontinence (50, 9%). Other urinary disorders were urge incontinence (18.2%), pollakiuria (5.5%). Myelitis (11%), spinal cord tumors (7.3%), multiples sclerosis (5.5%), encephalitis (3.6%), traumatic spinal cord (3, 6%), and spina bifida (3, 6%) were the principal etiologic. Unknown etiologic represented (56.4%). Urodynamic exploration found dysuria (36.4%), vesicosphincter dyssynergia (25.5%), high bladder activity (44.9%), low compliance (18.4%), level basic tone (18.4%), high compliance (16.3%), sphincter deficiency (22.4%), and sphincter hypertension (8.2%).

Conclusion: Urodynamic exploration aspects in neurological bladders are multiple. Adequate therapeutic depends on results of this exploration.

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Abstract – WCN 2013

No: 2745

Topic: 10 – Neurorehabilitation

The outcome of stroke patients at 1 year after discharge

K. Wongpichet^a, S.S. Ngaosinchai^a, S. Saentaweesoek^b. ^aKhon Kaen University, Khon Kaen, Thailand; ^bDepartment of Rehabilitation Medicine, Khon Kaen University, Khon Kaen, Thailand

Background: Stroke is common condition leading to disability and decreasing quality of life. Therefore, continuing home rehabilitation is the important way to maintain or improve patient's ability and to prevent further complication.

Objective: To study outcome of stroke patients at 1 year after discharge.

Material and methods: Chronic stroke patients who were admitted to rehabilitation ward, Srinagarind hospital were recruited. All participants were asked to complete the questionnaire which consisted of 6 items: personal data, stroke severity scale, basic Activity of Daily Living (ADLs), instrumental Activity of Daily Livings (IADLs) and mental health.

Results: Of these 54 stroke patients, most (74%) were male, with mean age 60 (SD11) years old. Regarding ADLs, 44% were physically independence, 40% had mild to moderate disability, and 16% had severe disability. Most of them (74%) continued self rehabilitation at home. The major problem of self rehabilitation was easily fatigue and spasticity (30%), distress (17%) and insufficient family support (15%). About half had poor mental health when compared with general population. Although they could do self home rehabilitation, they still need the home rehabilitation by health professional. Surprisingly, 80% of patients received alternative medicine; Thai massage, acupuncture and herbs.

Conclusion: Most stroke patients had been continuing home rehabilitation, however home visit by health professional still be necessary.

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Abstract – WCN 2013

No: 2747

Topic: 10 – Neurorehabilitation

The people empowering people (pep) program for stroke patients in Srinagarind hospital

S.S. Ngaosinchai. Khon Kaen University, Khon Kaen, Thailand

Sunday, September 22, 2013

16:30-18:00

Hall I

Free Papers Session 9: Neuro-rehabilitation

Chairpersons: R. Takahashi, *Japan*
R. Stien, *Norway*

- 16:30 **FUNCTIONAL CONNECTIVITY NETWORK BREAKDOWN AND RESTORATION IN BLINDNESS**
M. Bola, C. Gall, C. Moewes, A. Fedorov, H. Hinrichs, B.A. Sabel, *Germany*
- 16:40 **ISLANDS OF CONSCIOUSNESS IN VEGETATIVE STATE OR FUNCTIONAL LOCKED-IN SYNDROME?**
R. Formisano, S. Catani, C. Falletta Caravasso, M. D'ippolito, F. de Pasquale, U. Sabatini, *Italy*
- 16:50 **STROKE AND APHASIA QUALITY OF LIFE SCALE (SAQOL-39). EVALUATION OF ACCEPTABILITY, RELIABILITY AND VALIDITY OF CHILEAN VERSION**
V. Diaz, R. Gonzalez, D. Salgado, D. Perez, *Chile*
- 17:00 **MODULATION OF CORTICAL PLASTICITY BY WHOLE-HAND ELECTRICAL STIMULATION IN ATTEMPT TO IMPROVE HAND MOTOR FUNCTIONS AFTER STROKE**
L.-S. Koenig, M. Christova, K. Schwenker, H. Bartsch, G. Luthringshausen, E. Gallasch, A.B. Kunz, M. Seidl, E. Trinka, S.M. Golaszewski, *Austria*
- 17:10 **NEUROMODULATION OF THE SENSORIMOTOR CORTEX BY VIBRATION STIMULATION OF THE WHOLE-HAND**
S.M. Golaszewski, M. Seidl, A.B. Kunz, M. Christova, K. Schwenker, L.-S. Koenig, R. Nardone, E. Trinka, F. Gerstenbrand, *Austria, Italy*
- 17:20 **IMPACT OF SOFT-TISSUE-SHORTENING ON GOAL ACHIEVEMENT IN PATIENTS TREATED WITH BOTULINUM-TOXIN A (BONT-A) FOR POST-STROKE UPPER-LIMB-SPASTICITY (ULIS-2 STUDY)**
S. Ashford, K. Fheodoroff, J. Jacinto, L. Tumer-Stokes, *UK, Austria, Portugal*

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