

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)**

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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**

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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**

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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

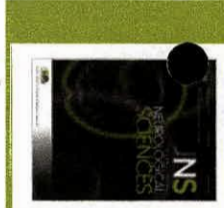
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