

**T80. Alteration of intermuscular coherence in synergistic muscle pairs during actual elbow flexion contractions after cervical spinal cord injury—Sylvain Crémoux<sup>1,\*</sup>, Camille Charissou<sup>1</sup>, Jessica Tallet<sup>1</sup>, Andrea Abade-Moreira<sup>1</sup>, Fabien Dal Maso<sup>2</sup>, David Amarantini<sup>1</sup> (<sup>1</sup> France, <sup>2</sup> Canada)**

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**Introduction:** During isometric contractions, the level of antagonist muscles activation is increased in people with cervical spinal cord injury (cSCI) in comparison to healthy participants. This alteration of antagonists activation after cSCI has been primarily associated with a lower cortical control of the spinal mechanisms – especially reciprocal inhibition – regulating agonists-antagonists co-activation. Through time-frequency intermuscular coherence analysis, which is likely to reflect the strength of the common neural drive across multiple muscles, this study investigates the influence of a cSCI on the common neural drive regulating the activity of agonist and antagonist muscles pairs.

**Methods:** The EMG of elbow flexors (biceps brachii, brachioradialis) and elbow extensors (long and short heads of the triceps brachii) was recorded while 8 participants with cSCI (SCI group) and 10 able-bodied participants (AB group) performed 21 isometric 6-s elbow isometric flexion contractions at 3 force levels (20%, 40% and 60% of MVC). The magnitude of intermuscular coherence between the EMG signals from elbow flexors (AGO-AGO), elbow extensors (ANTAGO-ANTAGO) and all possible pairs of elbow flexors-extensors (AGO-ANTAGO) was quantified in alpha (8–12 Hz), beta (15–30 Hz) and gamma (35–60 Hz) frequency bands. The magnitude of the intermuscular coherence and the mean net joint torque produced around the elbow joint were analyzed over a 2-s stable force production window for all contractions. The effects of the Force level and Group were tested using adequate statistical tests according to the distribution of the dependent variables.

**Results:** Results revealed that the net joint torque significantly increased with the Force level in both groups with no significant Group difference. In the beta-band, AGO-ANTAGO intermuscular coherence magnitude was significantly lower in the SCI group than in the AB group. In the gamma-band, the ANTAGO-ANTAGO intermuscular coherence magnitude significantly increased concomitantly with the Force level in both groups. No significant intermuscular coherence was found in the alpha-band, whatever the group and the muscle pair.

**Conclusion:** The alteration of AGO-ANTAGO intermuscular coherence magnitude in the beta-band after cSCI could reflect reduced common neural drive influencing the spinal inhibitory mechanisms. This finding may suggest lower common drive to agonist-antagonist muscle pairs in SCI participants, which could take part in the alteration of antagonist muscles co-activation. Increased ANTAGO-ANTAGO coherence magnitude with the force level revealed in the gamma-band could be related to the Piper rhythm phenomenon, which contributes to synchronize muscle activations to gain in efficiency, especially at high force levels. Despite lower intermuscular coupling between agonist and antagonist muscles, our results taken together support that the central mechanisms controlling the modulation of the force level are preserved during actual contractions after cSCI.

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**T81. What is the most sensitive electrodiagnostic criteria for the diagnosis of Guillain Barré syndrome?—María L. Rattagan (Argentina)**

**Introduction:** Clinical electrophysiological studies are important in the evaluation of patients with Guillain-Barré Syndrome (GBS). Several criteria have been proposed, both for demyelinating (AIDP) and for the axonal form (AMAN). They have different sensitivities for diagnosis in clinical practice. Our objective were to assess the sensitivity of different electrodiagnostic criteria for early detection and characterization of GBS in an Argentinian cohort.

**Methods:** We compared retrospectively 7 published sets of electrophysiological criteria (Albers et al., Van Den Berg et al., Ho et al., Hadden et al., Italian Guillain-Barré Study Group, Cornblath et al. and Rajabally et al.) in patients with clinical diagnosis of GBS, who were consecutively included in our IGOS cohort between 2014 and 2017. Electrophysiological tests were performed twice: at diagnosis and within four weeks.

**Results:** Sixteen patients were included, 9 males, mean age 46.87 years. The highest sensitivity for AIDP in the first study was Albers (75%) followed by Van Den Berg and Hadden (68.75% and 62.5% respectively). The second study increased sensitivity to 85.41%, 83.34% and 70.84% (Van Den Berg, Albers and Hadden respectively). AMAN was identified in 31.25%, increasing up to 47.91 with the second study under Rajabally criterion, followed by Ho et al. (12.5%).

**Conclusion:** AIDP was the most prevalent form. The highest sensitivity was with Albers and Van Den Berg criteria. Sensitivity is further increased in equivocal cases when a second study is performed. Using the recent criteria by Rajabally, GBS can be characterized as axonal in over 40% of patients.

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**T82. Neonatal brainstem audiometry is associated with language development—Jaana M. Saranto<sup>\*</sup>, Helena Lapinleimu, Suvi Stolt, Satu Jaaskelainen (Finland)**

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**Introduction:** Preterm birth increases the risk for abnormal neurodevelopment including delayed language development. Function of the auditory pathway in neonatal period may correlate with language outcome in childhood. Our objective was to study if neonatal brainstem auditory evoked potential (BAEP) and brainstem audiometry (BA) results in preterm babies are associated with receptive lexicon at one year corrected age.

**Methods:** In this retrospective study, we included 155 preterm babies (birth weight  $\leq 1500$  g and/or birth  $\leq 32$  gestational weeks) born 2007–2012 in Turku University Hospital providing the following information: BAEP and BA recording results at the mean corrected age of 1.1 months (0.28 SD) and information on early receptive and expressive lexicon growth at the mean corrected age of 12.1 months (0.55 SD) gathered using the Finnish version of the MacArthur Communicative Development Inventory (CDI). CDI is a structured rating instrument where parents denote the words that their child understands but does not say (receptive lexicon) and the words they say (expressive lexicon). In this study, we used only the receptive lexicon. This was done because the expressive lexicon is very small at one year of the age. All children were from Finnish