

OP47

Change of cortical motor program in magnetencephalographie (MEG) studies in late accessory to suprascapular nerve transfer in obstetric brachial plexus lesions

Willem J.R. van Ouwerkerk, A Hillebrand, B van Dijk

Departments of Neurosurgery and Neurophysiology, VU Medical Center, Amsterdam, The Netherlands

Introduction: It is not uncommon that children suffering an obstetric brachial plexus lesion (OBPL) may recover spontaneously except for active glenohumeral exorotation. In bringing the hand to the mouth typically a Trumpet sign is shown and children f.i. cannot comb their hair and have difficulties in writing. In general these are Group I lesions of spinal roots C5 and C6 or the Superior Trunk. All functions recovered except for the function of the Suprascapular Nerve, which surprisingly is a branch of the otherwise recovered and functioning Superior Trunk.

Clinical Studies: Contradictory observations are made in these children not fitting peripheral nerve lesions. A study in a series of these children was performed. Electromyography showed voluntary muscle activity and MRI showed hardly any muscle atrophy or fatty degeneration of spinatus muscles. During operations the Suprascapular Nerve was intact and reactive. If other Superior trunk functions recovered spontaneously the lack of active exorotation can be hypothesised to be caused by developmental apraxia. Central motor programs are developed between the 3rd and 7th month. The time frame where recovery of the OPBL also takes place. Other developing motor programs during recovery may irreversibly dominate over exorotation. In over 80 patients where only active exorotation did not recover an Accessory to Suprascapular Nerve Transfer was performed at varying ages, the majority over 12 months and even in much older children from 3 to 15 years of age. Over 90% of children reached functional exorotation over 0° (more than neutral position) and were able to reach their mouth without or a minimal Trumpet sign. To investigate possible changes in central cortical representation a pilot study was performed in a case of a boy aged 15 years with the classical picture of lack of active exorotation. An accessory to suprascapular nerve transfer was performed with excellent results as will be shown in video's. Before operation and during follow up MEG studies were performed for different tasks, especially exorotation. Shift of cortical motor representation could be demonstrated in follow up studies.

Conclusion: In children with OBPL showing spontaneous recovery of arm function except for exorotation an Accessory to Suprascapular Nerve Transfer is a very good option to restore active external rotation. Timing of the procedure is not proven to be strictly age dependend. Central nervous system plasticity plays an as yet to be investigated role in recovery or suppression of recovery.