# Abstract #1150.docx

**ELECTROPHYSIOLOGICAL AND MORPHOLOGICAL OF CERVICAL TRAPWZIUS MUSCLE IN NECK PAIN PATIENTS WITH CERVICAL MYELOPATHY**

Aim: In past reports regarding the association between the neck pain and the trapezius muscle, surface electromyograms and oxygenation study of the muscle are found occasionally, however, none relates to a more detailed Motor Evoked Potential (MEP). We documented MEPs to evaluate the electrophysiological and morphological pathology of the trapezius muscle according to neck pain in patients with cervical myelopathy prospectively.

Methods: Consecutive 100 surgical patients (69 males, 31 females, mean age 72.2 years) with cervical myelopathy were recruited. Before surgery, neck pain was evaluated by Visual Analogue Scale (VAS). Cranial stimulation under general anesthesia derived MEPs. Transcranial MEP monitoring was attempted immediately before surgery under general anesthesia, and latent time and amplitude the trapezius muscle were measured. Before surgery, the cervical spine range of motion and the lordotic angle were measured using X-ray, and the cross-sectional areas of the trapezius muscle were measured using cervical MRI sagittal T2-weighted images, and the hardness of the trapezius muscle was measured by using a muscle hardness meter.

Results: In patients with neck pain, MEPs of the trapezius muscle showed a significantly short latent time ($p<0.05$), while amplitude tended to be large with no significance. In patients with neck pain, the hardness of the trapezius muscle showed significantly high ($p<0.05$) and the cross-sectional areas were significantly small ($p<0.05$). In addition, the cross-sectional areas showed positive correlation with MEP latent time ($p<0.05$, $r=0.230$) and negative correlation with MEP amplitude ($p<0.05$, $r=-0.346$). On the other hands, there was no significant association between neck pain and the cervical spine range of motion and the cervical lordotic angle.

Discussion: To our knowledge, this is the first study to report the association between the neck pain and electrophysiological evaluation, while previous studies reported the association between the neck pain and trapezius muscle atrophy. However, we should remember that subjects in our study are the patients of cervical myelopathy. We suppose that in patients with neck pain, shortening of MEP latent time and increasing of MEP amplitude mean excessive neuromuscular excitability, which induce atrophy and hardness of trapezius muscle, and as a result, the neck pain may be caused.