Highlight Poster #3

Investigation of Segmental Motor Paralysis after Cervical Laminoplasty using Intra-Operative Spinal Cord Monitoring

Nobuhiro Tanaka, MD, PhD, Hiroshima, Japan
Kazuyoshi Nakanishi, MD, Hiroshima, Japan
Naosuke Kamei, MD, Hiroshima, Japan
Takeshi Hiramatsu, MD, Hiroshima, Japan
Satoshi Ujigo, MD, Hiroshima, Japan
Norihiko Sumiyoshi, MD, Hiroshima, Japan
Takanori Rikita, MD, Hiroshima, Japan
Mitsuo Ochi, MD, Hiroshima, Japan

Introduction: Clinical worsening of motor functions remains a major problem that may occur after operative treatment of the cervical spine. Intraoperative neurophysiologic monitoring with transcranial electric motor evoked potentials (TceMEP) was performed on patients who underwent cervical laminoplasty. The purpose of the study is to evaluate the usefulness of intraoperative spinal cord monitoring with TceMEP for prediction of the occurrence of motor paralysis after cervical laminoplasty.

Methods: Two hundred forty-five consecutive patients [168 men and 77 women; mean age, 65 years (range, 27-89 years)] who were scheduled to undergo cervical laminoplasty were included in this study. There were 170 cases of cervical spondylotic myelopathy, 40 cases of ossification of the posterior longitudinal ligament (OPLL), 19 cases of cervical spondylotic amyotrophy and 16 cases of intervertebral disc herniation. All patients underwent posterior laminoplasty under intraoperative spinal cord monitoring with TceMEP. Transcranial electrical stimulations were delivered through pin-type electrodes and the evoked potentials were recorded over the deltoid, biceps and triceps muscles in the bilateral upper extremities and thoracic spinal cord.

Results: All patients showed sufficient postoperative recovery from their clinical symptoms. Postoperative C5 palsy developed in 6 patients (2.8%, 6 males and 1 female) but there were no critical decrease in the amplitude of the evoked potentials. The incidence of C5 palsy involved 5 of 170 (2.9%) cervical spondylotic myelopathy patients, 2 of 40 (5.0%) patients with cervical OPLL. No patients with cervical disc herniation or cervical spondylotic amyotrophy developed C5 palsy.

Conclusions: No abnormalities were observed on TceMEP monitoring even in those patients who developed postoperative transient C5 palsy. These results suggest that the development of postoperative segmental palsy after cervical laminoplasty is not associated with intraoperative injury of the nerve root or the spinal cord. Surgeons should be aware that segmental palsy is a possible complication of cervical laminoplasty even in the absence of intraoperative nerve injury.