Introduction:
The primary objective of the present study was to investigate whether intra-operative evoked potential monitoring can be used to predict functional outcomes after surgical intervention for cervical myeloradiculopathy.
Methods:
Patients that underwent intraoperative neurological monitoring (IONM) during different surgical interventions for cervical myeloradiculopathy at our institute were included in this prospective study. The diagnosis of myeloradiculopathy was made clinically and radiologically on MRI. Functional outcome assessment was done using the Nurick grade and the modified Japanese orthopedic association score (mJOA). Unpaired t-test was used to evaluate the significance of the difference in Nurick grade and the mJOA between the group that showed improvement in motor evoked potential and the group that showed no improvement or deterioration in the motor evoked potential.
Results:
IONM was performed in 28 cases. 9 cases (32.1%) showed improvement in motor evoked potentials but no change in somatosensory evoked potential. 18 cases (64.3%) demonstrated no change in motor or somatosensory evoked potentials compared to baseline findings. Deterioration in motor evoked potential was observed in one patient (3.6%). The cohort was divided into group A (9 participants showing improvement in motor evoked potential) and group B (19 participants who showed no change in evoked potentials compared to baseline or showed deterioration in motor evoked potentials). The mean postoperative Nurick grade of group A and B at three months was 1.8 ± 0.97 and 2.0 ± 0.67 respectively and this difference was not significant. The mean postoperative Nurick grade of group A and B at six months was 1.6 ± 0.88 and 1.6 ± 0.50 respectively and this difference was not significant. The mean postoperative mJOA score of group A and B at 3 months was 13.1 ± 1.76 and 12.1 ± 1.39 respectively and the unpaired t-test concluded that this difference was not significant. Spearman correlation coefficient showed an insignificant correlation between intraoperative findings of neurological monitoring and the mJOA score at three months postoperatively. The mean postoperative mJOA score of group A and B at six months was 14.3 ± 1.32 and 12.9 ± 1.29 respectively and the unpaired t-test concluded that this difference was significant ($p = 0.011$). Spearman correlation coefficient showed a significant positive correlation between the intraoperative findings of neurological monitoring and the mJOA score at six months postoperatively ($r = 0.47$; $p = 0.01$).
Conclusion:
Trend pertaining to improvement in mJOA was observed in patients showing improvement in motor evoked potentials was seen only at six months postoperatively whereas there was no significant difference at three months. We recommend serial monitoring of mJOA but also would like to caution other investigators that the benefit of intraoperative monitoring might be observed only around 6 months postoperatively.