

Use of Intraoperative Electrophysiological Monitoring During Resection of Intradural Extramedullary Spinal Tumors

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Introduction

With the advent of intraoperative neurological monitoring (IONM), surgical outcomes of various neurosurgical pathologies have improved such as brain tumors and degenerative spine diseases. However, its usefulness in intradural extramedullary tumor has not been well-documented in the current literature. In our institution, we routinely utilize motor-evoked potentials and somato-sensory-evoked potentials to navigate neurosurgeons intraoperatively. Here we aim to summarize clinical results of IONM with special attention to its diagnostic validity.

Methods

Retrospective patient database review from January 2010 to December 2015 revealed that there were X patients who harbored spinal intradural extramedullary tumors and underwent tumor resection surgery with IONM. Clinical outcomes of these patients such as baseline characteristics, operative data, IONM findings, and perioperative functional outcomes were retrospectively collected and statistically analyzed. P values < 0.05 were set as a statistical significance.

Results

Baseline characteristics and operative data were as follows: average age 58.2, gender (female) 56.3 %, pathology (meningioma 42.3%, schwannoma 38.2%), grade of tumors, preoperative symptoms (motor 27.6%, sensory 30.8%, gait disturbance 8.1%), and NFI or II patients 8.1%. To predict 30-day postoperative neurological decline, positive findings for IONM yielded the sensitivity of 86.8%, specificity of 45.6%, positive predictive value of 58.5%, and negative predictive value of 63.5% (AUC=0.586). On multivariate analysis, IONM negative, gross total resection, and younger age (<65 years old) were associated with better neurological outcomes at the last follow-up.

Conclusions

IONM for resection of spinal intradural extramedullary tumor were a reasonable modality to predict 30-day postoperative neurological decline as well as functional outcomes at the last follow-up. Future prospective studies might be warranted to further elucidate its utility.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the importance of intraoperative neuromonitoring in resection of intradural extramedullary tumors.

References