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Guidelines

Intraoperative motor evoked potential monitoring – A position statement by the American Society of Neurophysiological Monitoring

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HIGHLIGHTS

- This article comprehensively reviews intraoperative motor evoked potentials.
- It then forms summary recommendations based on current evidence and expert opinion.
- The International Society of Intraoperative Neurophysiology collaborated and endorses this position statement.

ABSTRACT

The following intraoperative MEP recommendations can be made on the basis of current evidence and expert opinion: (1) Acquisition and interpretation should be done by qualified personnel. (2) The methods are sufficiently safe using appropriate precautions. (3) MEPs are an established practice option for cortical and subcortical mapping and for monitoring during surgeries risking motor injury in the brain, brainstem, spinal cord or facial nerve. (4) Intravenous anesthesia usually consisting of propofol and opioid is optimal for muscle MEPs. (5) Interpretation should consider limitations and confounding factors. (6) D-wave warning criteria consider amplitude reduction having no confounding factor explanation: >50% for intramedullary spinal cord tumor surgery, and >30–40% for peri-Rolandic surgery. (7) Muscle MEP warning criteria are tailored to the type of surgery and based on deterioration clearly exceeding variability with no confounding factor explanation. Disappearance is always a major criterion. Marked amplitude reduction, acute threshold elevation or morphology simplification could be additional minor or moderate spinal cord monitoring criteria depending on the type of surgery and the program's technique and experience. Major criteria for supratentorial, brainstem or facial nerve monitoring include >50% amplitude reduction when warranted by sufficient preceding response stability. Future advances could modify these recommendations.

Contents

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