40. Brachial plexopathy: What to monitor?—Jaime R. Lopez (Neurology and Neurosurgery, Stanford University School of Medicine, USA)

The utility of IONM in the surgical treatment of peripheral nerve disorders is well established and described in the literature. The purpose of this presentation is to demonstrate the utility of IONM in brachial plexus surgery and review how the different clinical neurophysiologic testing modalities, such as nerve action potentials, EMG, SSEPs and TcMEPs can be used to assess different regions of this complex structure. Amongst other things, IONM can assist in identifying the different brachial plexus structures, determine areas of abnormality or injury, evaluate for peripheral nerve continuity and evaluate for possible root avulsion. However, in order to do this the IONM physician must have a clear understanding of the brachial plexus anatomy and of the specialized techniques used in assessing these structures. Thus, the following will be described in detail: 1. The technique used to obtain nerve action potentials; 2. Techniques used to determine peripheral and central continuity of neural structures; and 3. How IONM can alter surgical management. Unfortunately, the short time allocated for this presentation does not allow for a full discussion of this complex subject and the attendee is directed to reviews of the subject available in the literature.

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41. Clinical Practice Guidelines (CPG) to Intraoperative Neurophysiological Monitoring (IONM)—Lilia de la Maza Krzeptowsky (Hospital Angeles del Pedregal, Mexico City, Mexico)

CPGs are documents that include recommendations intended to optimize patient care based on the systematic and updated review of the international literature and risk–benefit evaluation of interventions in health. Method: Multidisciplinary and interinstitutional developing group of 21 physicians, with eight different specialties. The approach of this CPG is of prevention and diagnosis of a pediatric and adult population for secondary- and tertiary-care hospitals. We investigated fifteen structured medical interrogations on the usefulness of Intraoperative Neurophysiological Monitoring (IONM) during intracranial, spine, and mixed peripheral nerves surgeries. The search was performed in specialized academic and scientific online sites. The search criteria were period 10 years, language English, Spanish. Selected documents: Guide 1, systematic reviews 6, randomized trials 8, observational studies 44, other sources 1. Measurement scales: SIGN (Scottish Intercollegiate Guidelines Network) and CEPD (Classification of evidence for diagnostic precision). Results: We obtained 30 evidences, 29 recommendations, and 1 point of good practice. Conclusions: This guide is intended to make the IONM criteria equivalent, organize its practice, and facilitate interdisciplinary communication.

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42. EEG in coma and prognosis—Peter W. Kaplan (Department of Neurology, Johns Hopkins Bayview Medical Center, Baltimore, MA, USA)

Coma and encephalopathy pose major clinical challenges in management and prognostication. Delays in diagnosis worsen outcome. The EEG reveals a variety of patterns typical of encephalopathy and coma that correspond to different levels of consciousness, stages of evolution, etiologies and prognosis. A recognition of EEG patterns that include different dominating frequencies (alpha, beta, theta, delta), their variability over time, different morphologies, the existence of sleep elements, reactivity to external stimuli, and the correlation of these EEG elements to underlying causes, can guide the intensivist and clinician towards optimal treatment strategies. Following cardiac arrest, when there is encephalopathy and coma, there are various EEG patterns that can complement the clinical examination and other diagnostic studies, and that are indicative of ultimate outcome, are diagnosic of intercurrent seizures, or can be indications of the futility of treatment. EEG can rapidly, safely and inexpensively guide clinicians and families towards the optimal understanding of encephalopathy and coma syndromes that are challenging and stressful to family and treatment teams, alike.

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43. Non convulsive status epilepticus and EEG—Peter W. Kaplan (Department of Neurology, Johns Hopkins Bayview Medical Center, Baltimore, MA, USA)

Over 50 years ago, EEG revealed nonconvulsive status epilepticus (NCSE). There is no universal agreement on EEG characteristics of NCSE. Lack of consensus arises as NCSE does not exist in isolation, but reflects SE under various conditions occurring with age, cerebral development, encephalopathy, and epilepsy syndrome. Current definitions include "boundary conditions", with EEG seizure activity without clinical seizures. EEG interpretation is an art; what appears to one as SE, is not to another. Seizures and epilepsy syndromes evolved beyond classification as focal or generalized conditions, into a syndromic approach, with similar evolution of EEG analysis. The NCSE syndromic approach is a clinical and EEG correlation addressing the neonatal period, infancy, childhood, adulthood, and late adulthood based on age, encephalopathy, cerebral development, etiology, and syndrome. Proceeding from a classification of SE, a systematic search for reports with EEG patterns of NCSE using the online medical search engine PubMed for 22 search strategies produced 4328 results, and 123 cases with corresponding EEG patterns of epilepsy syndromes. A synthesis of EEG morphologies and evolutions of individual NCSE syndromes according to the NCSE classification can be found in "Ele ctroencephalographic criteria for nonconvulsive status epilepticus: Synopsis and comprehensive survey" (Sutter and Kaplan, 2012).

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44. The EEG of encephalopathy—Peter W. Kaplan (Department of Neurology, Johns Hopkins Bayview Medical Center, Baltimore, MA, USA)

Variously known also as encephalopathy and delirium, confusion in patients presents diagnostic and management challenges to physicians in the emergency room, the hospital wards and the intensive care units. There have been few tools to diagnose and follow the treatment of encephalopathic patients, and clinicians increasingly are aware of the supplemental information that EEG can offer beyond clinical examination and cerebral imaging. The EEG reveals a variety of patterns typical of encephalopathy that represent the severity of cerebral compromise, the presence of ictal complications, and a rough guide to the relative contributions of several concurrent causes of impaired consciousness. These EEG patterns may correspond to different levels of consciousness, stages of evolution, etiologies and potential reversibility. Studies have revealed the significance of triphasic waves, slow delta activity, mixed theta/delta, and frontal intermittent delta and their clinical associations with structural, infectious, toxic or metabolic problems, and outcome. Correlations can be made among EEG and imaging studies to help the intensivist and clinician produce a more comprehensive picture of the delirious patient. Along with the clinical examination and complementary