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Neurophysiological Techniques for Epilepsy

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Message from the Guest Editor

Epilepsy is eminently a bioelectrical pathology. Changes in neurotransmitters, synapses, ion channels or global membrane excitability are among the mechanisms responsible for seizures. Therefore, techniques devoted to analyzing electric brain currents are the main tools available when it comes to studying epilepsy. In the center of these, we have electroencephalography (EEG) and all of techniques derived from it (video-EEG, electrocorticography, etc). Recent developments in numerical analysis have permitted an outburst of works describing exciting pathophysiological explanations (e.g., epileptic network theory) and powerful diagnostic tools (quantified EEG or qEEG). Magnetoencephalography (MEG) and synchronized EEG–magnetic resonance imaging are also promising fields (or consolidated realities). New developments in diagnosis are appearing as wereable devices. However, neurophysiology is not only relevant in the diagnostic side. New approaches, including deep brain stimulation (DBS) and extracranial methods (transcranial magnetic or direct current stimulation), as well as open and closed-loop implanted systems, promise a better control, even for generalized epilepsies.

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Message from the Editor-in-Chief

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