The potential of SEPs recordings to address Neurodevelopmental disorders in children

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Abstract

The pathophysiology of several clinical conditions in humans presents with abnormal brain cortical excitation levels. This is potentially due to either reduced cortical excitability (e.g., all conditions of depressed consciousness) or enhanced cortical excitability (e.g., migraine, epilepsy, and dystonia). We can measure the level of cortical excitability by means of different techniques; some of them are invasive, several others are not. Here we will consider the potential of somatosensory evoked potentials (SEPs) as: 1) their use is very common in ordinary clinical activity, 2) technicians are largely independent in recording acquisition, 3) their analysis and interpretation are quite fast, 4) the technology required is economic, and 5) they are extremely well tolerated by children. In order to be useful for wide clinical research in developmental age, any technique has to fulfil these criteria, and SEPs do so.

Preliminary applications of SEPs recording in different neurodevelopmental disorders will be presented (mental retardation, autism, ADHD). The potential of SEPs recordings for addressing the underlying pathophysiology of these disorders on the one hand, and for targeting pharmacological treatments and for monitoring the efficacy for rehabilitation interventions, on the other one, will be discussed.