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OP 16 Interstimulus Interval Change of Paired Somatosensory Stimulus on Cortical Evoked Potentials

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Background: Migraine headache is a complex disease associated with dysfunction in the processing of multiple sensory information. Recently somatosensorial temporal discrimination was reported to be remarkably prolonged during migraine attacks. We aimed to study the change of somatosensory evoked potentials (SEP) in relation to the interstimulus interval (ISI) alterations of paired median nerve stimulation.

Methods: Median nerve was electrically stimulated and subsequent SEPs were recorded by a glass electrode inserted into the primary somatosensory cortex in male Wistar rats(200-250g), under urethane (1200mg /kg, ip) anesthesia. Paired somatosensory stimuli was applied with 35, 50, 80, 140 and 500 ms ISI values. The data was also analyzed in different frequency bands including high frequency oscillations (HFO).

Results: The duration and latencies of the second response weren't significantly different than the first response in all ISI values. A reduction in amplitude was observed for the second response in short ISI, whereas it was observed to be high in higher ISI values. The ratio of 2nd/1st response was close to 1 in 500 ms ISI. The Integral of 2nd response to 1st response was significantly different in 150-400 Hz band for all ISI values but 500 ms. The integral of early HFO of 2nd response was significantly different from the 1st response in 51-150 Hz, 150-400 Hz and 400- 800 Hz band, in all ISI values but 500ms.

Conclusion: The processing of 2nd sensorial responses are dependent on ISI values. Early HFO changes without accompanying late HFO alterations, indicate thalamic drive to cortex plays a major role in determining the 2nd response in low ISI values.