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# Auditory evoked potentials reveal normal mismatch processes but abnormal attention orienting in migraine patients

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## Abstract

The pathophysiology of migraine is incompletely understood, but a number of electrophysiological studies suggest changes in cortical excitability. Most event-related potential (ERP) studies converged on abnormal habituation patterns in migraine patients between attacks. In the auditory modality, habituation pattern depends on the paradigm used in studies. We studied habituation and mismatch processes, using a classical auditory habituation paradigm. In 22 patients suffering from menstrually-related migraine and in 20 age-matched control subjects, auditory ERPs were recorded in 3 sessions: in the middle of the menstrual cycle, before menses, and during menses. In 12 patients, a migraine attack occurred during one of the peri-menses sessions. In each session, 200 trains of tone-bursts with an average of 10 stimuli per train were presented, including 2 duration deviants in each train. In response to the first stimuli of the trains, migraineurs exhibited in all sessions a larger orienting component of N1 than matched controls and in the interictal session a larger P3a, which normalized during attacks. They also showed a robust residual orienting component in response to all subsequent (standard and deviant) stimuli inside the trains. In contrast, the MMN response to deviants showed no difference between the two groups, with a normal decrease in response to a second deviant immediately following the first one. Moreover, in apparent contrast with previous results, we detected no habituation deficit in migraine patients. These results show exacerbated attention orienting to any new incoming stimulus in migraine patients, but normal mismatch and habituation processes.

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