Evaluation of topographic differences between long-latency visual evoked potentials triggered by perception of familiar and non-familiar faces among healthy subjects using electroencephalography method

Научный руководитель – а а а

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Background. The exact position of consciousness was always an arguable question in philosophy and medicine. Consciousness consists of perception and estimation of outer world and self-perception and self-estimation inside that world, or simply self-consciousness [1, 2]. Structures, that take part in processes of self-consciousness, still remain uncertain, though analysis of scientific literature showed, that presumably, right hemisphere region involved in self-recognition. Whereas left hemisphere and temporoparietal regions of both hemispheres involved in recognition of non-familiar faces [3, 4].

Methods. Seventeen healthy participants were selected for this study (mean age = 27). 15 photographs with subject's own face and 60 photographs with non familiar face were used as the visual stimuli. All photographs were demonstrated in a random order at 2 sec intervals. Participants had seen photographs for 0, 5 sec and at that period of time they had to press the button on the joystick, and only when they had seen their own face.

Results.

P100 distribution from frontal to occipital electrodes in response to familiar and non-familiar face

N100 distribution from central to frontal and occipital electrodes in response to familiar and non-familiar face

P200 distribution from right temporal through central to occipital electrodes in response to familiar and non-familiar face

N200 distribution from right parietal through central to frontal electrodes in response to familiar face; distribution from left back temporal through central to frontal electrodes in response to non-familiar face

P300 distribution from frontal and occipital electrodes to central electrodes in response to familiar face; distribution from occipital through central to the rest of electrodes in response to non-familiar face

N.B. Familiar face in our experiment means subject's face.

Discussion. We obtained latencies and amplitudes of P100, N100, P200, N200, P300 visual evoked potentials (VEP) and determined their probable distribution around the cortex. Distribution changes from front to rear regions in early responses (P100, N100) and from rear to front regions in late responses (N200, P300). Responses to non-familiar face arise considerably earlier than to familiar.

Источники и литература

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