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ABSTRACTS

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THE POSSIBILITY OF USING BRAINSTEM ACOUSTIC EVOKED POTENTIAL IN THE EXAMINATION OF PATIENTS WITH CHRONIC ALCOHOL INTOXICATION

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Introduction. It is known that the method of brainstem acoustic evoked potential (BAEP) has a certain versatility, since it is associated with conducting a signal along the auditory stem pathways and can be used for diagnostic purposes in both primary and secondary brain lesions of various etiologies. BAEP is the most stable and resistant to metabolic, toxic disorders and the influence of narcotic drugs, the electrical response of the brain, therefore it can be used in assessing the state of the brain stem systems, including in persons abusing psychoactive substances. Since there are very few works devoted to the study of BAEP in patients with chronic alcohol intoxication, it is of interest to assess the functional state of the stem formations of the ponto-mesencephalic level in patients with chronic alcohol intoxication.

Material and methods. 40 patients (37 men and 3 women) aged 29 to 60 years (average age – 43.34±8.32) were examined. The duration of alcohol abuse ranged from 5 to 28 years. The registration of the BAEP was carried out on the «Neuron-Spectrum-5» device of the «Neurosoft» company (Ivanovo, Russia) according to the standard method: an afferent stimulus in the form of a sound click with an intensity of 100 dB was supplied monoaurally with a frequency of 10 Hz sequentially to the left and then to the right ear. A series of 2000 responses was averaged. While stimulating each ear, at least two series of averaging were carried out. In the presence of disturbances of conduction at the peripheral level, making it difficult to determine the time of central conduction, an additional series of averaging was applied with an increase in the intensity of the stimulus (110, 120 dB). The frequency bandwidth of the amplifier is 100-2000 Hz. The overall response configuration (safety of all components), response time parameters were analyzed: peak latencies of components I, III, V and peak intervals I-III, III-V, I-V, response amplitude. Significant changes were considered to be an increase in these parameters by an amount exceeding the corresponding normative indicators by more than 2.0 σ, which corresponded to a confidence level of $p< 0.05$. The normative parameters were obtained during the examination of 20 healthy subjects (comparison group). Statistical processing of the obtained data was carried out using the Statistica 11.0 for Windows package. The parameters (average, standard deviations) of the distributions of peak latencies and peak intervals of the BAEP were evaluated. Differences in averages were evaluated by the Student's t-criterion, differences were considered significant at $p < 0.05$.

Results. When analyzing the BAEP in the group of healthy subjects, the response configuration was preserved, there was a distinct isolation of all components (from I to V) of the response with the preservation of the normative indicators of peak latencies, peak intervals and response amplitude. When analyzing the indicators of BAEP in patients with chronic alcohol intoxication, three groups can be distinguished: group I (6 people) - the indicators of peak latencies and peak intervals of BAEP fit into the normative data (a similar pattern was observed in patients with a duration of alcohol abuse of less than 5 years), while in all cases there was a decrease in the amplitude of the response ($p<0.05$). In two patients from this group, peripheral type response disorders were noted with the preservation of peak intervals indicators; group II (21 people) - there was an increase in peak intervals I-III with the preservation of the peak latencies indicators of the main components of the BAEP, the amplitude V/I was reduced ($p<0.05$). The increase in peal intervals only I-III is quite difficult to explain, and most likely this phenomenon is more associated with a deterioration in the conduction ability of the auditory nerve than with the functional state of the isolated section of the caudal bridge; group III (13 people) - there was an elongation of the peak latencies V component, peak intervals I-III, I-V with a decrease in the amplitude V/I ($p<0.05$). An increase in the time of peak intervals I-III, I-V may reflect a violation of the functional state of a significant part of the activating system at the level of the bridge and the ponto-mesencephalic junction. A similar pattern of changes in BAEP was observed in patients with a duration of alcoholism of more than 20 years.

Conclusions. Thus, in 85% of cases, there were violations of the indicators of BAEP in patients with chronic alcohol intoxication, and in 30% of cases, violations of the sound signal along the auditory pathways of the brain stem at the ponto-mesencephalic level were detected, which allows using the stem acoustic evoked potential in the examination of patients with chronic alcohol intoxication, especially in the case of alcoholism duration of more than 20 years.