

Hörschwellen und akustisch evozierte Potentiale/Magnetfelder nach dem Besuch einer Diskothek

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Abstrakt:

The aim of the present study was to investigate with the MEG differences in the central auditory process caused by the strain of 4 hours disco-music. The noise level in discos with peaks up to 130 dB can cause permanent hearing defects beside the temporary threshold shift. The AEFs of 18 young healthy subjects with normal hearing (average age 19 years) were monitored with a 31-channel Philips biomagnetometer using test-tones of 0.5; 1; 2; 4; 5 kHz (bursts 50 ms +/- 5 ms rise time). The stimuli were applied contralaterally (always the right ear) through a specifically designed "Tube and Funnel System". To evaluate differences between the AEF before and after visiting a discotheque, we investigated the subjects first in the morning and second in the night, just after the visit to a disco. Additionally we investigated a group of subjects in the night, but without visiting a disco. Simultaneously we took the audiograms in the morning and in the night. The occurrence of the different components and their latencies and lengths were examined and compared. The measurement in the discotheque shows Sound pressure level (SPL) of 95 dB(A) in the middle with peaks of 110-120 dB(A) at the beginning and 125-130 dB(A) at the end of the night. Especially the deep frequencies have the highest SPL. After four hours in the discotheque, the subjects show a temporary threshold shift in the audiograms of the night of up to 20-25 dB in all frequencies which almost disappeared after 2 hours. The mean component of the AEFs, the N100m, of all 1 kHz measurements shows differences. In the night the N100m is later and exhibits a longer duration than the N100m of the measurements at the day. The comparison of the occurrence of the components N100m, P50m, P160m and P200m shows the following result: The N100m is found in 100% in the AEFs of the day and the night measurements. The P50m, P160m and the P200m exist in 58%, 74% and 68% (day) and 31%, 44% and 61% (night). These components are less often in the night. Control-measurement: The N100m of the AEFs taken in the night without the disco noise show nearly the same peak-latency as the N100m of the AEFs taken in the day. So we conclude that the differences are caused by the noise of the disco and not by the vigilance of the subjects in the night. The results of this study show differences between the incidence and the duration of the components of the AEF. The differences show clearly a temporary character which was also confirmed by an investigation a few days after the disco visit. We suppose that there is a temporary change in the central auditory process caused by the sound pressure level of the discotheque. The majority of discotheque visitors (both younger people and young adults) suffered from tinnitus in the ear. These reports were in line with the audiometric data showing a TTS up to 30 dB HL that usually disappeared within 2 hours after ending the music audience.

