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Changes in hearing threshold in workers with asymmetric hearing loss exposed to shipyard noise: an 11-year follow-up study

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ABSTRACT

Objectives: Changes in the hearing threshold of hearing asymmetry were evaluated in Korean shipbuilding workers, and the effects of noise exposure and age on the progression of hearing asymmetry were investigated. **Design**: Data were collected from Korean shipyard workers during the 2010-2020 in this retrospective cohort study. 684 workers underwent serial pure tone audiometry during the period. Each subject underwent a physical and otologic examination and completed a health-related questionnaire. The linear mixed model was used to examine differences between asymmetric and symmetric hearing loss groups. **Results**: Of the 684 workers, 327 (49.3%) had binaural hearing threshold difference (BHTD) of 15 dB or greater at least one frequency in this study. In the begining of the study, subjects were men only, the mean age was 44.7±5.4 years and mean employment period was 21.1±6.7 years. High-frequency BHTD was 15.36 times more frequent than low-frequency BHTD. There was a statistically significant BHTD between left and right ears at low frequencies (0.5-2 kHz) and high frequencies (3-6 kHz) favoring right side hearing. In addition, the difference in hearing threshold tended to continuously increase at high and low frequencies, but there was no statistically significant difference during the follow-up period. **Conclusion**: The results showed that occupational noise exposure contributed to the BHTD. BHTD changes were dominantaly influenced by noise exposure and aging effect. The progression of BHTD was greater in workers with high-frequency BHTD than those with low-frequency BHTD.

Keywords: Noise, Hearing asymmetry, Shipyard worker, Follow-up study