

Winning the 2nd prize in the research sector of the 53rd Korean Society of Otorhinolaryngology-Head and Neck Surgery's Annual Spring Meeting

4th June

The free paper presented in the 53rd Korean Society of Otorhinolaryngology-Head and Neck Surgery's Annual Spring Meeting(held at Seoul St. Mary's Hospital on 20th May, 2012) won the 2nd prize followed by one 3rd prize.

This paper re-analyzed the result of some part from 'Study on relations between exposure to risky factors against special medical check-up recipients and their disease development(I), especially focusing on assessment of noisy workplace workers and their medical check-up results, which was 2010's chosen theme.

Title: Exacerbation of Noise-Induced Hearing Loss by Co-Exposure to Organic Solvents and Heavy Metals in Korean Workers

ABSTRACT

Background: While noise exposure is undoubtedly a predominant contributor to occupational hearing loss, recent evidence suggests that exposure to ototoxic chemicals such as organic solvents and heavy metals in occupational environments could be additional contributors to hearing loss. Despite these implications, few epidemiologic studies regarding interaction via co-exposure in the workplace have been conducted.

Study design: This study aimed to investigate whether the co-exposure to organic solvents and/or heavy metals in the workplace modify the risk of noise exposure on hearing ability. We examined 30,072 adult workers in a wide range of industries from the Korea National Occupational Health Surveillance 2009, focused on occupational audiological disorders. Air conduction hearing thresholds were measured at 0.5 to 6 kHz and pure-tone averages (PTA) (means of 2, 3, and 4 kHz) were computed. Occupational noise, heavy metal and organic solvent exposure levels were assessed on an industrial basis. Noise was measured at the daily eight-hour time-weighted average level (8HR TWA dB). Heavy metals and organic solvents were classified as "exposed" or not by industrial hygienists, respectively.

Results: In a multivariate linear model, an increase in PTA with the occupational noise level was observed to be significantly higher in subjects exposed to heavy metals and organic chemicals as compared to unexposed subjects.

Conclusion: Our results provide epidemiological evidence that co-exposure to heavy metals and/or organic solvents may exacerbate the effect of noise exposure on hearing

loss in a human population. Our findings support the need for general monitoring of ototoxic occupational environments with noise limits so as to design prevention strategies against work-related hearing loss.

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