噪音作業勞工聽力損失危險因子之探討

A Study of Risk Factors for Occupational Noise-induced Hearing Loss

中文摘要

針對烏腳病盛行地區探討含錳超氧歧化酵素（MnSOD）基因多形性和高血壓之間的關係。以 30 歲以上並且每週居住在研究地區至少五天的居民作爲研究對象，並利用 78 年收集的資料以及 78 到 86 年間所採集的生物檢體。兩位公共衛生護士以結構式問卷訪視每位研究對象，問卷內容包括社會人口學資料、抽菸與喝酒習慣、職業史、居住史、飲水史與家族疾病史等項目。血球萃取出之 DNA 利用聚合酵素連鎖反應及限制片段長度多形性分析含錳超氧歧化酵素粒線體目標序列 Val/Ala 變異。利用高效率液相層析儀分析血清中微量營養元素包括維生素 A、維生素 E、蕃茄紅素、B—胡蘿蔔素。調整高血壓傳統危險因子及累積砷暴露後，含錳超氧歧化酵素 Val/Ala 和 Ala/Ala 基因型者，高血壓相對危險性是 Val/Val 基因型者的 2 倍，顯著偏高。調整年齡、性別、身體質量指數、累積砷暴露等重要危險子後，含錳超氧歧化酵素基因型爲 Val/Ala 和 Ala/Ala 者不論三酸甘油脂及維生素 E 濃度爲何，危險對比值有上升趨勢。調整了年齡和性別後，帶有 Val/Val 基因型且累積砷暴露越低、身體質量指數正常、三酸甘油脂濃度越低者，高血壓的相對危險性有下降的趨勢。調整重要危險因子後，含錳超氧歧化酵素基因型爲 Val/Val 時，累積砷暴露在 10.2 ppm*年以上者高血壓相對危險性是基因型爲 Val/Val 時，累積砷暴露小於 10.2 ppm*年者的 7.9 倍，呈統計上顯著性，此外，也發現累積砷暴露在 10.2 ppm*年以上者，不論三酸甘油脂、低密度脂蛋白膽固醇及維生素 E 濃度爲何，高血壓的相對危險性有上升的趨勢。因此本研究推論含錳超氧歧化酵素基因多形性可能是高血壓基因上的一個易感受性因子，基因型的不同可能修飾個體罹患高血壓的危險性，而後天環境的暴露、生活及飲食習慣更是影響高血壓相當重要的危險因子。

英文摘要

Noise induced hearing loss (NIHL) is one of the occupational diseases with high prevalence. The more influential is that once people get NIHL, they can’t be recovered and cured, but preventable. The specific aim of this study is to explore risk factors of NIHL, and to investigate the interaction effect of smoking and organic solvents exposure.A total of 975 workers who was included in this study. These workers who do the pure tone air conduction audiometry by Beltone 120 hearing inspector from January to September in 2004 in a teaching hospital at south Taiwan. A structural questionnaire for collecting the personal data and occupational exposure history were also performed.The results showed that (1) after adjusted confounding

factors, the workers who exposed to noise have higher risk of hearing loss than who didn’t. The odds ratio is 1.6 (95%C.I.=1.20~2.13). (2) after adjusted confounding factors, smoking workers have higher risk of hearing loss than nonsmokers. The odds ratio is 1.28 (95%C.I.=1.00~ 1.17). (3) the subjects who smoked and exposed to noise would result in additive synergy (additive synergy index is 2.40) and multiplicative synergy in hearing loss. (4) exposed to organic solvents and noise would conduce additive synergy (additive synergy index is 1.24) and multiplicative synergy in hearing loss. It is recommended that government should take smoking and organic solvents exposure into consideration as part of the “Hearing Protection Program” to diminish the possible auditory damage of workers.