A Prospective Study of Cardiovascular Risk Factors and Incident Hearing Loss in Men

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INTRODUCTION

Hearing loss is the most common sensory disorder afflicting US adults, with over 36 million Americans suffering from this condition. The potential relation between common cardiovascular risk factors, including elevated BMI, smoking, hypertension, diabetes mellitus, and elevated cholesterol and incident hearing loss is yet to be definitively determined in human subjects. The significance of identifying such associations could lead to enhanced understanding of potential underlying pathophysiologic mechanisms for age-related hearing loss. Therefore, we prospectively evaluated the association between cardiovascular risk factors and development of hearing loss in an adult male cohort.

METHODS

The Health Professionals Follow-up Study enrolled 51,529 male health professionals 40-74 years old at baseline in 1986. Professionally-diagnosed hearing loss and year of diagnosis were assessed in 2004. Exposures of interest were body mass index (BMI), smoking, hypertension (HTN), diabetes mellitus (DM), and elevated cholesterol. All analyses were prospective, using exposure information that was collected prior to the diagnosis of hearing loss. Participants were censored at the date of diagnosis of hearing loss, age 75, or the date of death, whichever came first. Age and multivariable-adjusted hazard ratios (HRs) were calculated using Cox proportional hazards regression models.

RESULTS

Characteristics of the participants at study onset in year 1986 are shown in Table 1. During 369,079 person-years of follow-up, 3,488 cases of hearing loss were reported. Past smoking and elevated cholesterol were independently associated with an increased risk of hearing loss; there was no association with BMI, hypertension and diabetes (Table 2). After adjusting for age, race, profession, BMI, smoking, hypertension, diabetes, elevated cholesterol, and regular use of aspirin, NSAIDs, and acetaminophen, the multivariate HR of hearing loss in participants with a history of past smoking compared to nonsmokers was 1.09 (95%CI 1.01-1.17). The multivariate HR for elevated cholesterol compared to those with no history of elevated cholesterol was 1.10 (95%CI 1.02-1.18) (Figure).

CONCLUSION

Our study did not identify a significant association between variation in BMI or a history of hypertension or diabetes and incident hearing loss. A history of past smoking or elevated cholesterol was, however, independently associated with a small but significant increase in risk of incident hearing loss. Given the aging of the population and the high prevalence of hearing loss, identification of potential mechanisms as well as risk factors to reduce the burden of this common condition should be an important public health priority.