

Abstract

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Serum Homocysteine and Folate Concentrations Are Associated with Prevalent Age-Related Hearing Loss.

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BACKGROUND: Elevated total serum homocysteine (tHcy) concentrations associated with vitamin B-12 or folate deficiencies may adversely affect blood flow to the cochlea, leading to age-related hearing loss (presbycusis). However, only 2 small cross-sectional studies have assessed the link between folate, vitamin B-12, or tHcy and presbycusis.

OBJECTIVE: We aimed to determine both the cross-sectional and longitudinal association between serum concentrations of folate, vitamin B-12, or tHcy and risk of age-related hearing loss.

METHODS: The Blue Mountains Hearing Study is a population-based survey of age-related hearing loss (1997-1999 to 2002-2004). Presbycusis was measured in 2956 participants (aged ≥ 50 y) and was defined as the pure-tone average of frequencies 0.5, 1.0, 2.0, and 4.0 kHz >25 dB hearing level (HL). Serum concentrations of folate, vitamin B-12, and tHcy were determined from blood samples.

RESULTS: Participants with elevated tHcy (>20 $\mu\text{mol/L}$) concentrations had a 64% increased likelihood of prevalent hearing loss (>25 dB HL) [multivariate-adjusted odds ratio (OR) 1.64; 95% CI, 1.06-2.53]. Low serum folate levels (<11 nmol/L) increased the odds of prevalent mild hearing loss (>25 -40 dB HL), multivariate-adjusted [OR 1.37 (CI 1.04-1.81)]. Serum vitamin B-12, however, was not significantly associated with prevalent hearing loss. Serum folate, vitamin B-12, and tHcy concentrations were also not significantly associated with an increased risk of incident hearing loss. Serum concentrations of tHcy and folate were associated with age-related hearing loss cross-sectionally, but no temporal links were observed, which could be due to insufficient study power.

CONCLUSIONS: Further, large prospective studies will be required in the future to assess these associations.

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