



Migraine and tinnitus: implications for multidisciplinary management

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Introduction

Patients with migraines often experience vestibular and audiological symptoms, especially tinnitus. Both conditions are linked to vertigo, neck pain, and depression, which can affect the disease burden.

Objective

To examine the correlation between tinnitus characteristics and disability with measures of disability, central sensitization, and depression in migraine patients.

Methods

Forty-six women with migraine and tinnitus (aged 18-55 years) were recruited. All participants underwent audiological evaluations to exclude hearing loss and acuphenometry assessments to determine tinnitus intensity (dB) and frequency (Hz). Questionnaires administered included the Tinnitus Handicap Inventory (THI), Headache Impact Test (HIT-6), Central Sensitization Inventory (CSI), Neck Disability Index (NDI), Patient Depression Questionnaire (PHQ-9), and Dizziness Handicap Inventory (DHI). Spearman correlations were classified as weak ($\rho < 0.3$), moderate ($0.3 < \rho < 0.6$), and strong ($\rho > 0.7$).

Results

Moderate, significant correlations were observed between tinnitus intensity in the right ear (RE) and left ear (LE) with THI (RE: $\rho = 0.335$, $p = 0.037$; LE: $\rho = 0.373$, $p = 0.025$), HIT-6 (RE: $\rho = 0.371$, $p = 0.020$; LE: $\rho = 0.344$, $p = 0.040$), CSI (RE: $\rho = 0.385$, $p = 0.015$; LE: $\rho = 0.432$, $p = 0.008$), NDI (RE: $\rho = 0.347$, $p = 0.030$; LE: $\rho = 0.386$, $p = 0.020$), and PHQ-9 (RE: $\rho = 0.377$, $p = 0.018$; LE: $\rho = 0.397$, $p = 0.016$). Negative, moderate, significant correlations were found between tinnitus frequency and NDI (RE: $\rho = -0.402$, $p = 0.011$; LE: $\rho = -0.491$, $p = 0.002$), and between LE tinnitus frequency and THI ($\rho = -0.437$, $p = 0.008$), CSI ($\rho = -0.357$, $p = 0.032$), and PHQ-9 ($\rho = -0.383$, $p = 0.021$). Positive, moderate, significant correlations were noted between THI and PHQ-9 ($\rho = 0.483$, $p = 0.001$), CSI ($\rho = 0.543$, $p = 0.000$), NDI ($\rho = 0.568$, $p = 0.000$), and HIT-6 ($\rho = 0.344$, $p = 0.019$). A strong, significant correlation was found between THI and DHI ($\rho = 0.768$, $p = 0.000$).

Conclusion

The perception of low-pitched and loud tinnitus, indicated by lower frequency and higher intensity sounds, and tinnitus-related disability correlate with greater disability related to headaches, neck pain, and dizziness, alongside increased central sensitization and depressive symptoms in migraine patients. These results emphasize the need for a multidisciplinary approach in audiological, psychological, and functional evaluations for better management of migraines and tinnitus.