Biological correlates of tinnitus-related distress: An exploratory study

Authors: Agnieszka J. Szczepek, Heidemarie Haupt, Burghard F. Klapp, Heidi Olze & Birgit Mazurek
Publisher: Elsevier
In: Hearing research 2014, Volume 318, p. 23-30; published online: December 2014

Abstract:

During the process of tinnitus diagnostics, various psychometric instruments are used to measure tinnitus-related distress. The aim of present work was to explore whether candidates for biological correlates of the tinnitus-related distress could be found in peripheral blood of patients and if so, whether there was association between them and psychometric scores that reflect tinnitus-related distress.

The concentrations of interleukin-1β (IL1β), interleukin-6 (IL6), tumor necrosis factor-α (TNFα) and a brain-derived neutrotrophic factor (BDNF) were measured in serum of 30 patients diagnosed with chronic tinnitus and tested for correlation with psychometric scores collected on the same day. Spearman's correlation analyses detected significant positive association between the concentrations of tumor necrosis factor *α* and tinnitus loudness, total perceived stress, tension and depression and a negative association between tumor necrosis factor *α* and a psychometric score “joy”. Concentrations of interleukin-1β correlated with the awareness grade of tinnitus. The correlation between visual analogue scale (VAS) “loudness” and tumor necrosis factor *α* as well as between “joy” and tumor necrosis factor *α* retained their significance ($p < 0.00167$) after the application of Bonferroni correction for multiple testing. Partial correlations removing the effects of age, hearing loss and the duration of tinnitus verified the results obtained using Spearman correlation. We conclude that measuring the concentrations of selected circulating cytokines could possibly become an additional objective element of tinnitus diagnostics in the future.

Related links:

- Online publication: https://doi.org/10.1016/j.heares.2014.10.007