

NOI-05-004-IP

Noise induced Tinnitus: Subjective experience and objective evidence

D.Prasher

University College London, Institute of Laryngology and Otology, 330 Gray's Inn Road

WC1X 8EE, London UK

Phone=00442079151621

Fax=00442072788041

email=d.prasher@ucl.ac.uk

Noise exposure is the most common cause for the generation of tinnitus. This study evaluated the variability of spontaneous emissions in industrial workers exposed to noise and reporting the presence of tinnitus in comparison with those exposed to noise but without tinnitus. The assumption being that exposure to noise leads to some instability within the cochlea, which alters the spontaneous emission activity. Thus those experiencing tinnitus may show greater variability than those without tinnitus.

198 mill workers in Poland exposed to noise levels between 85-95dBA for a mean of 12+6.6 years, 104 of whom had reported the presence tinnitus and 94 without tinnitus were evaluated for otoscopy, audiometry and otoacoustic emissions. The tests were repeated between 5-10 days in most subjects to check for variability.

There were significant differences in the mean age, pure tone average, transient emissions amplitude and variability between groups with and without tinnitus. There were no significant differences between sessions for these measures in either group.

Those with tinnitus had poorer thresholds by an average of around 15dB, and reduced TOAE of around 2.6dB compared with those without tinnitus. There are a number of factors such as age, pure tone thresholds and tinntius, which may be responsible for the reduction in emissions.

For the purposes of examining SOAE stability, all SORE peaks were classed as stable if SORE frequency in the two sessions remained unchanged and variable if SORE peaks were present in both sessions but shifted in frequency or present in one sessions and absent in the other. SOAE were present in 73.1 of tinnitus group and in 50% of nontinnitus group. Of these 92\$ of the tinnitus group, had present and variable SOAE whereas 48.9 of the non-tinnitus group did. Thus the positive predictive value was calculated at 65% for those with variable SORE having tinnitus and significantly higher at 86% negative predictive value for those with stable SOAE having no tinntus.

The likelihood ratio of tinnitus being present given that SOAE are present and variable is 1.87 and is significantly reduced for no tinnitus given that SOAE are present and stable at 0.156.

This study has clearly demonstrated that the incidence of spontaneous emissions is higher in noise-exposed workers than previously observed and the stability from week to week is significantly lower in those with subjective tinnitus.

