Central auditory dysfunction associated with solvent exposure

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The primary aim of this project was to study possible central auditory dysfunction associated with organic solvent exposure. 100 solvent-exposed workers and 100 non-exposed workers were selected to participate in the research. The test battery comprised pure-tone audiometry (PTA), acoustic reflexes, acoustic reflex decay test, transient evoked otoacoustic emissions (TEOAE), and the following auditory processing (AP) procedures: Hearing-in-Noise (HINT), Dichotic Digits (DD), and Random Gap Detection (RGD) tests. Also a self report inventory on subjects' level of hearing functioning, the Amsterdam Inventory for Auditory Disability and Handicap (AIADH), was conducted. Significant differences between solvent-exposed and non-exposed subjects were found for most of the auditory processing tests. Solvent-exposed subjects presented with poorer mean test results than non-exposed subjects. A high prevalence of auditory processing disorder was found among solvent-exposed subjects. Also, significant differences between groups were found for TEOAE reproducibility and AIADH scores. A higher percentage of solvent-exposed subjects presented with absent acoustic reflexes in comparison to non-exposed subjects. A bivariate and multivariate linear regression model analysis was performed. One model for each auditory outcome (PTA, TEOAE, HINT, DD, RGD, and AIADH) was independently constructed. For most of the models solvent exposure was significantly associated with the auditory outcome. Age, hearing level, and gender also appeared significantly associated with some auditory outcomes. This study provides further evidence of the possible adverse effect of solvents on the central auditory functioning.