

Passive Smoking: A Possible Risk Factor for Development of Minimal Hearing Loss in Children

Hossam Sanyelbhaa Talaat*

Department of Audiology, Menoufiya University, Egypt

*Corresponding author: Hossam Sanyelbhaa Talaat, Associate Professor of Audiology, Menoufiya University, Egypt, Tel: +20123275088; E-mail: Sanyelbhaa@yahoo.com

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Dear Editor,

Minimal Hearing Loss (MHL) is a commonly overlooked clinical problem; it affects about 5% of children. Children with MHL may be at risk academically due to their poorer speech perception in the noisy classrooms [1]. MHL has generally been defined as a group of hearing disorders that include mild hearing loss, unilateral hearing loss, and high-frequency hearing loss. MHL may result from conductive disorders such as otitis media with effusion or different sensorineural disorders [2]. Recently, we investigated the effect of second-hand smoke on the hearing of children. Passive smoking was correlated with development of sensorineural MHL [3]. The study group consisted of 411 children, their aged ranged between 5 to 11 years. The inclusion criteria were: i) Normal speech and language, ii) Absence of any disease or condition that may cause sensorineural hearing loss, iii) Normal middle ear function on the day of hearing assessment. They were divided into three groups according to the exposure to second-hand smoke at home; Group of "no exposure" whereas no smoker in the family (131 children), group of "mild exposure" whereas the father was the only smoking parent and smoking was prohibited at home (155 children), and group of "heavy exposure" whereas the mother was smoking, or the father was freely smoking at home and in the presence of his children (125 children). Audiological evaluation revealed that the prevalence of hearing loss was 3.8%, 4.5% and 12% in the "no exposure", "mild exposure", and "heavy exposure" groups respectively. Significant difference was only detected between the high exposure group and the other two groups. All children with hearing loss had minimal sensorineural hearing loss i.e., threshold of frequencies showing hearing loss were 20 or 25 dB HL. The risk ratio (95%

confidence interval) for development of hearing loss in the heavy exposure group compared to those none exposed children was 3.14 (1.18, 8.3) ($p < 0.05$). Smoking may induce sensorineural hearing loss through direct ototoxic effect of nicotine on the hair cells, or reducing the cochlear perfusion by either induces vasospasm and arteriosclerosis in the cochlear blood vessels or raising the carboxyhaemoglobin levels, which reduces the oxygen perfusion for the organ of Corti [4]. MHL reported in our study may represent an early stage of hearing loss which would later progress to more severe degrees of hearing loss with continuing exposure to second-hand smoke. This study emphasizes the importance of avoiding exposure of children to passive smoking which may be associated with development of hearing loss or its consequences such as learning disability.

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