DOI: 10.5281/zenodo.3233904
UDC: 616.28-008.1-053.2

Distortion products of otoacoustic emissions and their role in assessing hearing loss in young children

Doina Chiaburu-Chiosa, MD, PhD Applicant

Department of Otorhinolaryngology, Nicolae Testemitsanu State University of Medicine and Pharmacy Chisinau, the Republic of Moldova

*Corresponding author: doinachiaburu@yahoo.com
Manuscript received April 02, 2019; revised manuscript May 20, 2019

Abstract

Background: Hearing loss in children is far beyond the scope of otology, since audition is the basis of developing speech and cognitive abilities, as well as the child's personality. Due to its incidence and severe consequences that often lead to disability, hearing loss remains an acute issue for scholars and specialists of various fields.

Material and methods: There have been studied distortion products otoacoustic emissions in children from two groups: the control group included 30 children, aged between 1-36 months, with normal hearing; whereas the study group consisted of 110 children aged between 1-36 months with sensorineural deafness.

Rezults: We studied auditory distortion products (ADP) in the control group of children, where prior impedance had excluded any middle ear pathology, whereas the medical history data regarding the functional development of the auditory system and behavioral audiometry showed normal hearing. We studied ADP at frequencies of 500; 750; 1000; 1500; 2000; 3000; 4000 and 6000 Hz. The analysis of the obtained results revealed some particularities of the ADPs according to the tested frequencies. Thus, ADPs recording that explores 1000 Hz; 1500Hz; 2000Hz; 3000Hz; 4000Hz and 6000Hz frequencies showed no difficulty, being 100% recorded in all children within the control group. The background noise varied from – 10 dB SPL to – 20 dB SPL. Low frequencies were difficult to assess due to a significant environmental noise which in some cases was higher than the ADP amplitude.

Conclusions: As a result of ADP recording carried out in examined children, we conclude: the ADP recording, namely the "ADP audiogram" test, is an objective method with high sensitivity, which can be used in hearing screening in early childhood. The criterion for impaired hearing based on the "ADP audiogram" is the spectral interruption for frequencies higher than 1000 Hz.

Key words: distortion products, otoacoustic emissions, hearing loss, children.