Oto–Acoustic Emission and Auditory Brainstem Response Profile in Children with Speech Delay at Dr. Hasan Sadikin General Hospital Bandung

Liani Mulasari Gunawan,[1] Wijana,[2] Yuni S. Pratiwi[3]
[1]Faculty of Medicine Universitas Padjadjaran, [2]Department of Otorhinolaryngology–Head and Neck Faculty of Medicine, Universitas Padjadjaran/Dr. Hasan Sadikin General Hospital, Bandung, [3]Department of Physiology Faculty of Medicine Universitas Padjadjaran

Abstract

Background: Language and speech delay are the most common developmental disorders found in children. Hearing loss is the most common cause of speech delay among children. Hearing loss can be detected by subjective and objective examinations. Oto–acoustic emission (OAE) and auditory brainstem response (ABR) are objective electrophysiological examination with 100% sensitivity and 99% specificity. This study was aimed to describe OAE and ABR profile in children with speech delay at Dr. Hasan Sadikin General Hospital Bandung
Methods: This study was conducted in 2014 used the descriptive cross–sectional design with a total sampling of 333 medical records of children diagnosed with speech delay with inclusion criteria patients aged 1–5 years at the Hearing Disorders Clinic of Otorhinolaryngology–Head and Neck Surgery Policlinic at Dr. Hasan Sadikin General Hospital Bandung during the period of 2011–2012.
Results: Out of all of the samples, there were 176 boys (52.9%) and 157 girls (47.1%). Most of children aged 24–35 months. Eighty children (24%) with normal hearing and 253 children (76%) with hearing loss. Hearing loss with Sensorineural hearing loss (SNHL) type most occured at the profound degree with 244 cases.
Conclusions: Hearing loss is the most common cause of speech delay in children. Speech delay can be prevented by conducting the OAE and ABR examinations as early as possible. **[AMJ.2016;3(2):265–8]**

Keywords: Auditory brainstem response examination, hearing loss, oto–acoustic emission examination, speech delay

Introduction

Language and speech delay are the most common developmental disorders found in children.[1,2] Speech and language in children can give negative impacts to the socialisation, personality, behaviour and school attainment. These disorders are experienced by 5–8% pre-school age children. In Indonesia prevalence of speech delay in children is between 5–10% in school age children.[3-5]

Speech and language disorders are disorders or delay in children in speaking or using language in the daily life. Hearing loss is one of the most common causes of the speech delay.[6,7] The Joint Committee on Infant Hearing (JCIH) decided that hearing loss in children should have been detected at the age of three months and the proper intervention is started before six months or less.[8] This priority is in concert with the national initiative. It is shown in the result of a study conducted by Yoshinaga–Itano et al.[9]

Hearing loss can be detected by subjective and objective examinations. Oto-acoustic emission (OAE) and auditory brainstem response (ABR) are objective electrophysiological examinations with 100% sensitivity and 99% specificity. For children, OAE is an ideal screening from the ear to the cochlea, since it can examine babies from the age of one day in a fast, easy, and unpainful way. The ABR examination measures the brainstem auditory pathway and can estimate the threshold of hearing and the type of hearing loss (conductive, sensorineural, or mixed).[1,6] This study was aimed to describe OAE and ABR profile in children with speech delay at Dr. Hasan Sadikin General Hospital Bandung.

Correspondence: Liani Mulasari Gunawan, Faculty of Medicine, Universitas Padjadjaran, Jalan Raya Bandung-Sumedang Km.21, Jatinangor, Sumedang, Indonesia, Phone: +62811958787 Email: lianimulasari@gmail.com