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ORIGINAL ARTICLE

Sustained Auditory Attention Ability Test (SAAT) in seven-year-old children with cleft lip and palate

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Summary

Cleft lip and palate (CLP) is a risk indicator to middle ear alterations, which may damage the development of auditory abilities such as attention that is essential to learn new skills, oral and written communication. Studies on attention process with CLP population are recent and poorly explored in the specific literature. Thus, this study aims to contribute with new subsidies in the field as it investigates the performance of children with CLP in Sustained Auditory Attention Ability Test (SAAAT). **Material and Method:** Comparison of SAAAT performance between children with CLP and children without it. Prospective study. **Results:** ANOVA was used as variance analysis model with two factors to study the variables such as group and gender. The CLP group showed an average of 2.5 units higher than the control group. This difference is between 0.7 and 4.4 with 95% certain. **Conclusion:** children with cleft lip and palate had poorer performance on SAAAT when compared to those without such craniofacial anomaly, considering attention reduction only.

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INTRODUCTION

Congenital cleft lip and palate (CLP) develop in the face during the embryonic and initial fetal stages. Clinically, this anomaly presents as lack of closure of the lips, palate, or both. It is known that otitis media with effusion (OME) is almost universally present in this population because of auditory tubal dysfunction. This is due to lack of palate muscle fusion, which supports the theory that middle ear hypoventilation may be a cause of OME. The palatal tensor and elevator muscles fail to effectively open the auditory tube, since they lack contralateral support because of the altered cartilaginous skeleton.[1]

OME is a special form of otitis media; it installs itself silently, and is characterized by the accumulation of serous or a glue-like mucous liquid in the middle ear (glue ear). Today, this disease is one of the most common causes of often bilateral hypoacusis in children up to age 10 years.[2]

Although hearing starts in the uterus, it is not sufficient for children to understand auditory information and to use it as a communication tool. They need to acquire analysis and interpretation abilities to process the sounds that have been detected by the peripheral auditory system.[3]

Children with hypoacusis because of OME may present hearing loss, since the auditory system may fail to correctly decode messages when peripheral changes are present; in this case, messages are distorted and incomplete. The development of hearing for auditory processing depends on innate and biological abilities together with an experience of the environment. When such abilities are altered, there may be poor academic performance, delayed language acquisition, difficulty in understanding speech, and learning impairment.

Conductive hearing loss in the first years of life may result in altered auditory processing, poor attentiveness, and the ensuing communication deficits and learning impairment.

Attentiveness is present every day, allowing subjects to select which endogenous and exogenous stimuli are important for performing tasks. Auditory attentiveness is the ability to be prepared for and to focus on a sound stimulus, at the same time being prepared to receive a different stimulus at any moment. It is essential for acquiring the acoustic and phonetic aspects of language patterns, which are essential for learning how to read and write. There are different types of auditory attentiveness; one is sustained auditory attention, which is the ability to focus attention for a time period.[4]

The Sustained Auditory Attention Ability Test (SAAAT), which is still being developed, was created to describe the auditory attentiveness in children; it provides data to verify whether any existing attention difficulty causes learning impairment or not. It may be applied to evaluate auditory attentiveness, checking whether children are able to hear auditory stimuli during prolonged time periods, and to respond only to a specific tone. It is an auditory vigilance tasks that measures the degree of attentiveness of a child, which is measured by the correct responses to specific linguistic clues; it also measures sustained attentiveness, which is measured by the ability of a child to maintain attention and concentrate on a tasks during a prolonged time period. Feniman et al.[5] developed this test, applying it to 280 children aged from 6 to 11 years. The authors noted that younger children had more inattention errors and impulsiveness compared to older children, showing that scores correlate highly with age. They also found that throughout the group, the ability to maintain attention worsened as test task time increased. They concluded that the SAAAT might be useful in identifying auditory attentiveness difficulties.

A major cause of poor school performance in children is lack of attention. Attentiveness issues may be manifestations of several diseases, including Attention Deficit Hyperactivity Disorder (ADHD) and the Auditory Processing Disorder (APD), among others. There is, however, no consensus for establishing whether auditory attention difficulty is an associated component of APD or if it merely reflects an isolated deficit in the attentiveness process.

It is important to verify sustained auditory attention abilities in children with cleft lip and palate, because these children go through prolonged periods of sensory deprivation, which may cause changes in hearing, including attentiveness.

Cleft lip and palate is a risk indicator for middle ear alterations, which may impair the development of auditory abilities such as attentiveness, which is essential for learning new abilities, and oral and written communication. The study of attentiveness in the cleft lip and palate population is somewhat recent, and has been little investigated in the literature we reviewed. Thus, this study may yield additional data in this direction, as its purpose was to verify the performance of children with cleft lip and palate in the SAAAT, which assesses auditory attention processes.

MATERIAL AND METHOD

The institutional review board approved this study (number 233/2005). It was carried out during 2005 and 2006.

The sample comprised 55 children of both genders, aged from 7 years to 7 years and 11 months; two groups were formed, as follows:

- G1: a control group, consisting of children without cleft lip and palate;
- G2: a study group, consisting of children with cleft lip and palate.