P250

COGNITION LISTENNING EFFORT

Symptoms of auditory processing disorders (APD) in children with tinnitus

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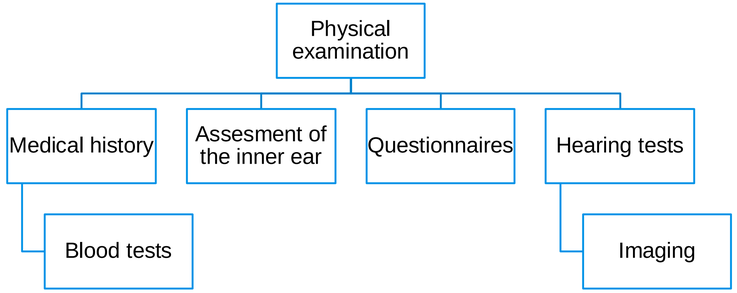
Abstract

Children with CAPD are characterised by variable responses to stimuli, lack of auditory attention, auditory hypersensitivity (perhaps with anxiety), difficulty understanding complex commands, and difficulty remembering things that have been delivered verbally. Children with CAPD have difficulties in functiong properly in everyday life. The children typically have problems with learing at school and they are distracted by noises.



Scheme 1. Diagnosis process

Objectifs

The aim of the study was investigate the relationship between tinnitus and CAPD in children with normal hearing thresholds.

Méthodes et Matériels

From September to November 2022, a hearing screening program was conducted among elementary school children in Warsaw. The research involved a group of 10,582 children aged 13 years (4891 girls and 4402 boys). The study protocol included screening pure tone audiometry, and a questionnaire about tinnitus, and a Scale of Auditory Behaviors (SAB) questionnaire. All children underwent audiometric screening using the Sense Examination Platform. Only air conduction thresholds for 0.5, 1, 2, 4, and 8 kHz were measured. Outcomes were regarded as abnormal if the threshold in either ear was worse than 20 dB at any frequency.

Résultats

The first stage of the study was to look at pure-tone audiometry and exclude subjects who had abnormal screening results. Analysis showed that 12.2% of the children tested (1289 subjects) had abnormal audiometry, and these were excluded. The remaining sample then consisted of 9293 children (4891 girls and 4402 boys). Of this number, 2046 students (22.0% of children who passed screening reported tinnitus. Of these, 85 children (4.1%) experienced tinnitus always and often; 601 (29.4%) experienced tinnitus sometimes; and 1360 (66.5%) reported tinnitus rarely. On the SAB questionnaire, a pass score (60–46 points) was obtained by 6444 students (69.3% of children with normal hearing). It shows that for those with no tinnitus (7247 children), 26.1% had an SAB total score of less than 46. Among children for whom tinnitus occurred rarely, 41.7% had a reduced score. For those who experienced tinnitus sometimes, 343 (57.1%) had a reduced score, and among those who experienced tinnitus often, 57.3% had a reduced score. Finally, for those who experienced tinnitus all the time (10 children), a reduced score was obtained from 70% of them. The clear trend between incidence of tinnitus and reduced SAB score is shown in Figure 1 and appears to show a significant trend.

Table 1. Frequency of occurrence of tinnitus in two groups – normal SAB score (right) and reduced SAB score (left)

	Total SAB score	
	12 to 45 points	46 to 60 points
Never	1889 (26.1%)	5358 (73.9%)
Rarely	567 (41.7%)	793 (58.3%)
Sometimes	343 (57.1%)	258 (42.9%)
Often	43 (57.3%)	32 (42.7%)
All the time	7 (70.0%)	3 (30.0%)
Total	**2849 (30.7%)**	**6444 (69.3%)**

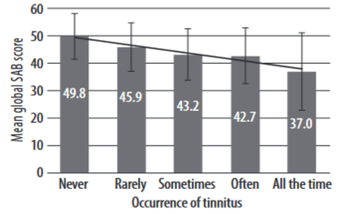


Figure 1. Mean global score on the SAB questionnaire plotted as a function of the frequency of occurrence of tinnitus

Conclusion

This study of 10,582 children aged 13 years has demonstrated a clear relationship between tinnitus and the presence of CAPD. The results show that the more frequently a child experiences tinnitus, the more likely they are to have symptoms associated with CAPD. Identifying such children opens the way for further diagnosis and treatment, and therefore has the potential to improve their quality of life.

Références

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