Introduction

The number of patients in developmental age who diagnosed with and are taking treatment for cancers increases significantly. An optimistic result is the fact that the treatment regimens lead to the cure of cancer, however, causing side effects. Therefore, it is necessary to implement schemes for late complications assessing the general state of health of the patients three years after the end of treatment. On the basis of the conducted schemes, including children treated chemotherapy because of cancers, laryngological examinations have been carried out since 2007, including assessment of the state of hearing.

Aim of the study: Assessment of the state of hearing over three and more years after the end of chemotherapy due to cancers in children.

Material and methods

The study involved 252 children (97 girls and 155 boys) aged 4 to 25, who had chemotherapy treatment in Accordance with established schemes. All children underwent ENT and audiological tests: tonal audiogram, tympanometry and acoustic otoemission before the treatment, during and immediately after the treatment, and 3 and more years after the end of the treatment.

In patients with detected hearing loss, complete audiological diagnostics was carried out, followed by selecting appropriate hearing aids.

Results

Hearing examination before the start of the treatment did not show any reception type disorders in any of the child. During the treatment only one case of hearing loss was reported.

In total, the sensorineural hearing loss was reported in 42 children (27 both-sided, 15 one-sided), i.e. in 16.013% of all patients treated with chemotherapy. Directly after treatment, the hearing loss occurred in 9 children (21.42%), however after three years, it was found in the next 33 children (78.57%).

Currently under constant care there are 24 children (13/485) use hearing aids, and two children have a recurrence of the cancers and deterioration of hearing. 9 children (365) did not accept hearing aids because they subjective missed improve.

Sensorineural hearing loss after chemotherapy treatment in children suffering from cancers

Anna Zakrzewska, Ewa Kott, Jarosław Andrzejewski, Małgorzata Zubowska

Department of Pediatric Otolaryngology, Department of Pediatric Oncology and Hematology, Medical University of Lodz, Poland

Tinnitus occurrence

Narrowband tinnitus 2-4 kHz at 35-45dB were detected at 9 on 12 children with bilateral hearing loss using hearing aids. Temporary narrowband noise 2-4 kHz, which only in 4 children the frequency range was specified, poked out of children with bilateral hearing loss did not accept hearing aid.

Speech audiometry

Speech audiometry (Kugler one-consonant test) was carried out for each of patients in free acoustic field, and the recorded articulation curves were within the normal range (speech discrimination threshold at 40-50 dB SPL). Next stage was carry out the test with white noise (WN), which was generated from an audiometer AD629 INTERACOUSTIC through INPUT80HM-PAP 27P speaker located in front of the patient’s axis of the head in the distance of 1 meter so that it could come equally to both ears. The noise was 5 dB SPL above the testing threshold.

Speech understanding assessment

In children who did not accept hearing aids in tests, speech understanding in „free auditory field” was normal (90-100% understanding for quiet speech level). However, a significant deterioration understanding speech in noise was found in all the children (50-60%). (green line)

In patients using hearing aids a considerable improvement was recorded (ca. 30-40%). (green line)

Conclusions

Children after chemotherapy treatment need long-standing care in order to spot the moment when the hearing loss emerges. Regardless of the patient’s decision to give up using hearing aids, there is a need to monitor the existing hearing loss so as to provide another form of support.