

THE ETHICAL ASPECT OF WORKING WITH AUDIOLOGY PATIENTS: THE RELATIONSHIP BETWEEN HEARING AND COGNITIVE FUNCTION

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Currently, the prevalence of hearing loss in the population is extremely high both among elderly and younger patients due to the prolonged and intense load on the auditory analyzer. Auditory disorders are currently one of the most important geriatric and ethical problems, since it has a significant negative impact on a human's emotional and physical condition, and is the cause of conflicts with other people. According to the research done in recent decades, there is a relationship between hearing loss and cognitive decline, which can be assessed using the MCAS (Montreal Cognitive Assessment Scale) test. This article presents a clinical case of a patient with progressive sensorineural hearing loss and, as a result, a decrease in cognitive functions, as well as the ethical aspect of the work of an ENT specialist with audiology patients.

Key words: hearing loss, cognitive function, ethical issue, sensorineural hearing loss

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ЭТИЧЕСКИЙ АСПЕКТ В РАБОТЕ С СУРДОЛОГИЧЕСКИМИ ПАЦИЕНТАМИ: СВЯЗЬ МЕЖДУ СЛУХОМ И КОГНИТИВНОЙ ФУНКЦИЕЙ

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В настоящее время распространенность потери слуха населения крайне высока — как у пациентов преклонного возраста, так и у более молодого контингента в связи с длительной и интенсивной нагрузкой на слуховой анализатор. Слуховые нарушения являются на сегодняшний день одной из важных гериатрических и этических проблем, поскольку она оказывает значительное негативное влияние на эмоциональное, физическое состояние человека, является причиной конфликтов с окружающими людьми. Согласно исследованиям последних десятилетий, есть взаимосвязь между потерей слуха и снижением когнитивных функций, оценить которую можно благодаря МоСА-тесту (Монреальская шкала когнитивной оценки). В данной статье приведен клинический случай пациентки с прогрессирующей нейросенсорной тугоухостью и, как следствие, со снижением когнитивных функций, а также этический аспект работы врача-оториноларинголога с пациентами сурдологического профиля.

Ключевые слова: нейросенсорная тугоухость, когнитивные функции, этическая проблема, снижение слуха

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Currently, the prevalence of hearing loss among the elderly is very high: up to 30% of men and 20% of women by the age of 70 and 55% of men and 45% of women over the age of 80 have hearing loss of at least 30 decibels (dB). But taking into account the scientific and technological progress, the use of headphones, including in-ear headphones, and long-term listening to loud music, the number of cases of hearing loss in younger people is growing [1]. The average number of unilateral deafness is varied from 12 to 20 cases per 100,000 population (3–6%) [2]. This hearing loss first affects high frequencies [3] which, in a mild form, leads to problems during conversations in noisy environments, and as it worsens, difficulties arise in any conversation due to problems with word differentiation and even voice identification [3, 4]. With time, it has been observed that hearing loss is associated with depressive symptoms, impaired communication and social relationships, as well as with increased difficulties in everyday life [5]. Sensory impairments, including hearing loss, are considered one of the main geriatric problems, since the loss has a significant negative impact on a person's emotional and physical condition [6–8], and is the cause of conflicts with other people. In this regard, patients rarely go to the doctor right away, blaming age for the problems that have appeared. The same applies to dementia conditions and milder forms of decreased intelligence

in the form of decreased cognitive functions developed for a long time, and the patient does not notice them, and in later stages he does not have the opportunity to critically assess his condition, and therefore gets to a doctor's appointment in such a state when the recovery reserve is already extremely small. Some other geriatric diseases, such as osteoporosis and cataracts, have a vivid clinical picture. Thus, the patients often consult a doctor more frequently, which allows to correct the conditions at early and uncomplicated stages. This article presents a clinical case of a patient with progressive sensorineural hearing loss and, as a result, a decrease in cognitive functions, as well as the ethical aspect of the ENT specialist's work with audiology patients.

In studies of the last 5 years [9], there has been a pronounced impairment of cognitive functions (CF) at an accelerated pace as compared to people with normal hearing. For the first time, the connection between the auditory function and cognitive abilities was mentioned in 1964 by a group of scientists headed by Kay D [10], and then, for almost 20 years, this topic was never reviewed. In 1989, a group of authors published a study that proved there is a link between hearing loss and progressive cognitive decline, whereas the socially significant amount of hearing loss was more than 40 dB [11]. Later, more fundamental works were published that suggested a link between hearing loss and deterioration of

cognitive functions due to physiological aging of the brain, which was confirmed by the presence of certain changes in magnetic resonance imaging of the brain [12]. Despite the impressive number of conducted studies, a major review of which was conducted in 2016 by Roberts, et al [13], the pathogenesis and relationship between hearing loss and progressive decrease in CF are not fully clear. Previously, it was believed for a long time that patients suffering from unilateral hearing impairment or loss required no rehabilitation measures, however, based on the results of the above studies, a logical question was posed: 'Will the level of CF change if the hearing level is stopped or restored?' At the moment, the only rehabilitation tools for deaf patients include a hearing aid and cochlear implantation (CI). Unfortunately, at the moment the indications for CI are strict, therefore, candidates for CI can only be people with severe hearing loss, such as bilateral deep sensorineural deafness (the average threshold of auditory perception at speech frequencies is more than 95 dB), the lack of a pronounced effect from properly selected hearing aids (binaurally), the absence of severe somatic diseases, cognitive and mental problems, as well as readiness for long-term rehabilitation after CI supported by relatives. The effect of rehabilitation measures can be seen in the study [14], which involved 94 patients who underwent CI, and then assessed CF and other life quality indicators: it was found out that intervention in the form of CI among the elderly led to an improvement in preoperatively impaired CF at months 6 and 12 after CI. In 2019, a large study was conducted at the St. Petersburg Research Institute of the Department of ENT Diseases [9] to assess mental health and quality of life in adult patients with acquired unilateral deafness using PHQ-9 (allow to identify the level of depression in a patient, consists of 9 questions and evaluates the mental state in a two-week period, as well as the need for prescribing drug therapy) and GAD-7 questionnaires (make it possible to determine the level of anxiety in the interviewee. The questionnaire consists of 7 questions. The patient must determine the frequency of presented conditions two weeks prior to the test), and PSQ (allows you to assess the stress level of the respondent. The patient must answer 30 questions presented in the questionnaire, without thinking or predicting the likelihood of a situation in the future), HHIA (widely used to assess the quality of life in adult patients with hearing impairment). According to the results of the study, it was revealed that patients with acquired unilateral deafness have increased levels of stress and anxiety, and suffer from depression. Patients with unilateral deafness are not satisfied with the quality of life in general, and hearing problems mostly affect the emotional and social aspects of life. There are also various questionnaires and scales for assessing CF, but the Montreal Cognitive Assessment Scale (MCAS) is most often used in clinical practice. This scale is designed for the rapid diagnostics of mild cognitive impairment. It evaluates various cognitive functions, namely attention and concentration, executive functions, memory, speech, optical and spatial activity, conceptual thinking, counting and orientation. This test takes about 10 minutes, which allows you to use this method of examination in the routine admission of patients. For people who have pronounced (3–4 degrees) bilateral hearing loss, an adapted HI-MCAS test has been developed where all voice commands have been replaced by text commands that are displayed on the screen of the subject.

DESCRIPTION OF THE CLINICAL CASE

A 63-year-old woman came to the clinic for an outpatient appointment with an ENT specialist complaining of hearing impairment and increased high-frequency noise in her

right ear, which prevented from falling asleep and reduced concentration, as well as periodic attacks of dizziness and periodic headaches. This exacerbation has been a problem for about 3 months. It is known from the anamnesis that the patient has been observed by an otorhinolaryngologist for 2 years with a diagnosis of 2nd degree chronic sensorineural hearing loss on the right and vestibulopathy of unknown origin. According to the clinical recommendations on sensorineural hearing loss [15], the patient underwent a complex examination. It included as follows: otoscopy (no pathology detected), an audiological examination — 2 degree right-sided sensorineural hearing loss (average hearing threshold of 45dB), bilateral type A tympanometry, ipsilateral reflexes were preserved bilaterally, magnetic resonance imaging of the brain (no data for the formation of the bridge-cerebellar angle were revealed, single vascular foci of white matter were found). The patient was consulted by a neurologist, who conducted a MCAS with 27 score level (moderate cognitive impairment) and diagnosed with 1-degree dyscirculatory encephalopathy of mixed genesis, migraine without aura. The patient was prescribed anxiolytic drugs (Grandaxin), which the patient did not take, as well as vascular and metabolic therapy (Mexidol, Cerebrosin); lifestyle recommendations were given. The last audiological control was more than a year and a half ago. It is worth noting that according to the clinical recommendations on sensorineural hearing loss, patients with this diagnosis are recommended to undergo an audiological examination at least once a year in order to control their auditory function and timely correct the auditory deficit. During the visit, a repeated audiological examination was performed with 3–4 degree right-sided sensorineural hearing loss and pronounced hearing loss at speech frequencies of up to 63 dB (from 500 Hz to 4,000 Hz). According to the repeated MCAS test, 22 points were assigned (mild dementia). Based on complaints of periodic dizziness and headache, as well as the diagnosis of migraine without aura established by a neurologist, additional examinations of the vestibular apparatus were conducted such as videonystagmography and caloric tests. No pathology was identified, but anamnestic data in the form of periodic dizziness and headache indicate at a probable vestibular migraine. When discussing the results of the examination, prognosis of the disease, and recommendations, and namely, while establishing an auditory prosthesis on the right to improve speech intelligibility and suppress the noise, the patient showed aggression towards the doctor and expressed distrust in the established diagnosis. In such cases, the doctor needs to explain the benefits of recommendations and prescriptions to the patient in detail. In case of repeated aggression and disagreement of the patient, it makes sense to consider the patient's referral to a psychiatrist / psychotherapist as an otorhinolaryngologist's consultation is time-limited.

DESCRIPTION OF THE CLINICAL CASE

According to the study [16], such an aggressive reaction to diagnosis and a decrease in CF is included in the clinical picture at the initial stage of behavioral frontotemporal dementia. In such an extremely sensitive situation, the doctor must tactfully refer this kind of patient to a dedicated expert, but, as a rule, in most patients, referral to a psychiatrist is stigmatized as they are sent to a psychiatric hospital, lose respect and trust of others, and are prescribed potent drugs. At this stage, the doctor needs to find out the patient's fears, select arguments and counterarguments that will help the patients change their position, calm down, and win over. To do this, the doctor

must be familiar with the law of the Russian Federation 'On Psychiatric Care and Guarantees of citizens' rights in its provision' No. 3185-1 dated 07/02/1992, which provides clear explanations on how psychiatric care is currently provided.

In this clinical case, the patient was convinced of the expediency of prescriptions and recommendations. The patient referred to an ENT specialist 6 months after a hearing aid selection and use, and conduction of therapy. The MCAS test was performed during the visit with 25 points being scored (moderate cognitive impairment), which shows an improved cognitive function and patient compliance.

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CONCLUSIONS

Thus, the above clinical case showed the existing relationship between impaired hearing loss and progressive decrease in CF, and the MCAS test turned out to be the optimal diagnostic tool for routine admission, and the importance of an individual approach to each deaf patient, supported by knowledge of legislation, is demonstrated. The information obtained can help otorhinolaryngologists, surdologists, and general practitioners provide timely and ethically correct care to patients with hearing impairment.

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