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ENT Diseases

FORMATION OF ACANNULAR TRACHEOSTOMY AFTER THE LARYNGECTOMY AND STRUMECTOMY WITH BILATERAL PARALYSIS OF VOCAL FOLDS

Introduction. Tracheostomy formation after laryngectomy is one of the most important problems for successful rehabilitation of patients with larynx cancer. Stenosis is a major tracheostomy complication, which causes breathing difficulty and requires permanent use of tracheostomy tube, making impossible voice prosthesis implantation. According to literature data the frequency of tracheal stenosis varies from 12 to 25%.

We use an original method of ”acannular” tracheostomyformation, for the trachea stenosis and funnel-shaping prevention.

Methods used. 87 patients(72males, 15females) had undergone surgery since April 2000 till May 2017. 74 patients were with larynx cancer and only 13patients were with bilateral paralysis of vocal folds after strumectomy or other reasons.

After total laryngectomy the planned area of tracheostomy is in the projection of 2nd and 3rd half-rings of trachea with shearing rectangular skin flap length and width of whichare corresponding to the future size of stoma. Above the 4th half ring of trachea anterior1/3 of 2nd and 3rd half rings have been resected for using cartilage lateral parts as a vertical support of future tracheostomy. The sutures imposed from the central part of the lower skin border with skin tension in both directions. Sutures were removed after 14-15 days. In patients after strumectomy complicated by bilateral paralysis of vocal folds, a resection of 2nd and 3rd half rings of trachea with maintaining the 1st ring in its place was also performed. The upper edge of skin bed is sutured with the front edge of upper half rings integral to preserve vocal function (when closing tracheostoma during phonation).

Results and discussion. Long-term results have revealed that 89% of patients with a stoma have normal breathing function and can effectively use voice prosthesis. In 9% of cases stoma was narrow due to patient’s short and thick neck. These patients have no breathing problem, but are unable to use voice prosthesis. At 6% of them surgical dilation of tracheotomy was performed.

Conclusion. The method of acannular tracheostomy provides normal respiratory function in patients after the laryngectomy and strumectomy with vocal cord paralysis. Besides, it increases patients’ life quality allowing usage of vocal prosthesis.

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Conference Abstracts

November 27th – December 1st

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Keywords:

breathing difficulty, tracheal stenosis, acannular tracheostomy, laryngectomy

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IMPACT OF ENT PATHOLOGY ON QUALITY OF LIFE OF ADOLESCENTS IN ARMENIA

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Introduction. Quality of life is important to everyone. Although the World Health Organization defined health very broadly as long as a half century ago, health has traditionally been measured narrowly and from a deficit perspective, often using measures of morbidity or mortality. But, health is seen by the public health community as a multidimensional construct that includes physical, mental, and social domains. A number of the QL researches investigating in different pathologies influences increased during the last decade. The QL research provides very important indices comprising objective information on the productivity of programs implemented during the course of pathology or prophylaxis studies. The aim of research was evaluating of QL among adolescents (15-17 age) suffering from ENT pathology by using of two general questionnaires.

Methods used. The objects of the research were adolescents (15-17 age). 3 schools of Yerevan were randomly selected to be eligible for the research. The research program has been discussed and guaranteed by the Ethics Committee of the Yerevan State Medical University. In this prospective case-control study were included 228 adolescents. We have formed two groups and measured QL changes. Case group were formed adolescents with ENT pathology and the other adolescents formed control group. International questionnaires PedsQLTM 4.0 and SF-36 were selected as a general tool for measuring QL. The SF-36 consists of 36 questions and comprises eight subscales; physical functioning (PF), role physical functioning (RP), role emotional functioning (RE), vitality (VT), mental health (MH), social functioning (SF), bodily pain (BP), general health (GH). Using of 8 subscales were formed 2 components; physical (PCS) and mental (MCS). PedsQLTM 4.0 a modular approach to measuring health-related quality of life (HRQOL) in healthy children and adolescents and those with acute and chronic health conditions, consists of 23 questions and comprises four subscales: Physical Functioning (8 items), Emotional Functioning (5 items), Social Functioning (5 items), School Functioning (5 items). Using of 4 subscales were formed 2 components; Physical Health Summary Score (8 items), Psychosocial Health Summary Score (15 items). For both questionnaires higher scores representing better quality of life.

Results and discussion. Data analysis ENT survey, conducted among 228 adolescents of Yerevan showed that chronic ENT diseases were detected among 47.4% (n = 108) adolescents. In studied population 38.2% were boys and 61.8 % girls. According to the data, QL scores in case group were lower, than it in case group for both of questionnaires. Total score of PedsQL in case group were 70.7±10.9, in control group - 90.6±10.4. In case group according to SF-36 questionnaire data most affected subscales were VT and GH subscales.

Conclusion. As shown the results of research HRQOL were affected in case of ENT pathology. Both questionnaires detected lower QL in case of ENT pathology. Total scores of SF-36 were lower.

Keywords:

quality of life, ENT pathology, adolescents

THE RESULTS OF ENDOSCOPIC ASSISTED MIDDLE EAR SURGERY IN PATIENTS WITH ACQUIRED MIDDLE EAR CHOLESTEATOMA

Introduction. The objective in the surgical management of acquired middle ear cholesteatoma is eradication of disease and the creation of a dry, safe ear.Secondary goals included hearing reconstruction and preservation of normal anatomy.

Methods used. 60 patients (16 to 65 y.o.) with cholesteatoma have been observed in this work (28male, 32female). 34 ears have extensive cholesteatoma with erosion of posterior bony wall of ear canal. In 26 patients cholesteatoma involves only tympanic cavity: in 6-anterior epitympanum, in 9-posterior epitympanum, in 10- retrotympanum, and in 1-only protympanum. Most patients mentioned periodic, only 7 of them- persistent otorrhea. All patients had conductive to mixed hearing loss with ABG more than 25dB (in 500, 1000, 2000Hz frequencies). The contralateral ear was identified normal in 38 patients. Posterior canal wall erosion due to cholesteatoma was identified as the primary indication for radical mastoidectomy. 34 patients were undergone CWD, 8 CWU tympanomastoidectomy with mastoid obliteration using of bone pate′ from the cortical layer of mastoid in 30 patients.In 18 patients tympanoplasty has been performed. Temporalis fascia has been used for tympanic membrane grafting. Tragal cartilage has been used in 27 patients for placement between the head of the stapes and fascia. In flattened tympanic cavity it provides good hearing results. In 16 patients ossiculoplasty with TORP or PORP has been performed. In 17 cases with involvement of cholesteatoma in the oval window area, ossiculoplasty has been postponed for second look surgery. During the surgeries endoscope has been used for visualization of hidden parts of tympanic cavity.

Results and discussion. Among the 60 patients 51(85%) grafts healed. In 5(8%) patients cholesteatoma developed during 2 years after the surgery. In 4(7%) patients smallreperforation occurred without cholesteatoma, that has been repaired with Youbee ointment.

Conclusion. Mastoidectomy with tympanic membrane grafting and mastoid obliteration provides eradication of disease, prevents reretraction of tympanic membrane in patients with middle ear cholesteatoma, extended into mastoid air sells. In terns, endoscopic assisted middle ear surgery allows direct visualization and access to the cholesteatoma located only within the middle ear cleft, without opening the mastoid.

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cholesteatoma, mastoid obliteration, endoscopic assisted middle ear surgery

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EVALUATION OF POTENCY OF LOCAL AND SYSTEMIC CORTICOSTEROID THERAPY IN CHRONIC RHINOSINUSITIS WITH NASAL POLYPS THROUGH THE IMMUNOCAP METHOD

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Introduction. Rhinosinusitis is a significant health problem which seems tomirror the increasing frequency of allergic rhinitis and results in a large financial burden on society (1).Chronic rhinosinusitis (CRS) with and without nasal polyps represent different stages of one chronic inflammatory disease of the mucosa of the nasal cavity and paranasal sinuses.The diagnosis of rhinosinusitis is put by of practitioners of various fields(2).The cause of nasal polyp disease remains controversial.Examination of the ImmunoCAP: Eosinophil Cationic Protein (ECP), Tryptase, total IgE and Phadiatop test involved in nasal polyp inflammation may lead to an improved understanding of the cause, prognosis, and treatment of CRS with nasal polyps.The aim of this study is to evaluate the differences of allergy markers such as ImmunoCAP: Eosinophil Cationic Protein (ECP), Tryptase, total IgE and Phadiatop test of CRS with nasal polyps (3).

Methods used. The study included 70 patients, who were diagnosed with CRS with nasal polyps in whom all 4 of the above mentioned parameters were elevated, accompaniedby a negative bacteriological nasal swab test. All patients consulted by allergologyst. The patients were split into 2 groups. The first group contained 35 patients who underwent therapy with intranasal corticosteroid sprays, and the second groupcontained 35 patients who underwent intranasal corticosteroid sprayscombined with systemic intramuscularcorticosteroid therapy. All the patients were under observation for 80 days, during which the clinical status of the patients was evaluated, and in the end, laboratorial tests were retaken. In the first group, there was a decline in IgE in 12 patients (34.2%, $P<0.01$), Tryptase in 4 patients (11.4%, $P<0.01$),ESP in 11 patients (31.4%, $P<0.01$) whilePhadiatop test was not altered in any patient. In the second group, there was a decline in IgE in 22 patients (62.8%, $P<0.01$), Tryptase in 14 patients (40%, $P<0.01$), ESP in 18 patients (51.4%, $P<0.01$) and Phadiatoptest in 6 patients (17.1%, $P<0.05$).

Results and discussion. We came to the conclusion that the patients who were administered both intranasalcorticosteroid spray and systemic intramuscular corticosteroid therapy showed better results than the patients who were administered onlyintranasal corticosteroid spray therapy. At the end of the study, taking into consideration that all of the 4 parameters, ImmunoCAP: Eosinophil Cationic Protein (ECP), Tryptase, total IgE and Phadiatop test are used efficient evaluating tools to diagnose CRS with nasal polyps.

Additional studies are needed to further explore thefield of diagnosis inCRS with nasal polyps so that new biomarkers can be identified and novel advances can be made to improve the treatment and management of this disease.

Conclusion. Our data indicate that ECP,Tryptase,totalIgE and Phadiatop tests are reliable markers to evaluate the efficacy of the treatment of patients withCRS with nasal polyps.

Keywords:

rhinosinusitis, nasal polyps, allergy

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Dynamic of vestibular changes in patients with dyscirculatory vertebrogenic Vestibular disorders

Introduction. Detection of typical vestibular changes in patients with cervical spine osteochondrosis, choose an adequate treatment are in high importancy of ENT pathology.

Methods used. 45 patients (35 to 63 y.o.) underwent otoneurological, audiological examination X-ray (CT - cscan) of the cervical spine, and extracranial doppler of great vessels.

Results and discussition. CT- scan of the cervical spine in 45 patients revealed the presence of disc herniation - 20, protrusions - at 19, the combination of herniation and protrusion - in 6 patients. According extracranial doppler of great vessels, all patients were identified hemodynamic disturbances due to severe tortuosity of the vertebral arteries, manifested by decreasing or increasing the speed of blood flow, also by positive functional tests. Among 45 patients - 36 marked vertigo alternating non-systemic dizziness. The remaining 9 patients complained of non-systemic dizziness, as a rocking body, a sense of instability underfoot, woozy. According to the tonal threshold audiometry in 28% were observed high-frequency sensorineural hearing loss and the presence of a permanent high-frequency noise in 40 %. The presence of vegetative symptoms (nausea, vomiting) indicated 2% of patients. According to otoneurological examination in 32 patients was recorded spontaneous horizontal nystagmus with rotary component.

Comprehensive treatment involved the administration of drugs of vasodilators, antioxidant drugs, metabolites, as well as preparations containing betahistine. Duration of the course composes 3 months. After repeat air bitermal caloric and rotational tests were observed moderate asymmetry by direction with the normalization of excitability (normoreflexia) of caloric and rotational nystagmus. In 90% patients the air bitermal caloric and rotational tests pronounced were observed asymmetry in the direction with a hypo- or hyperreflexia of caloric and rotational nystagmus. In all patients, the cervical test (an analogue of the de Klein test) was positive.

Conclusion. The dynamic otoneurological study helps to clarify the nature and severity of vestibular disorders in cervical osteochondrosis and therefore choose an adequate treatment.

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vertigo,
vertebrogenic vestibular syndrome

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A RARE CASE OF CONGENITAL TONGUE BASECYST IN COMBINATION WITH LARYNGOMALACIA.

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Introduction. The cyst of the tongue base is a rare pathology that causes obstruction of the upper respiratory tract. Congenital cysts of the base of the tongue are diagnosed in 1.82 of 100,000 live births. The cyst of the base of the tongue can cause stridor or respiratory distress or can be asymptomatic.Unlikethe tongue base cyst, laryngomalacia is the most common cause of stridor in young children. Laryngomalacia accounts for approximately 60% of stridor cases. In the available literature, we find single cases a of combined pathology in congenital cyst of tongue base and laryngomalacia.

Case presentation. A newborn girl (1.5 months old) was admitted to the ENT department at the SurbAstvatsamayr medical center with symptoms of difficult and noisy breathing, feedingdifficulties, failure to thrive and respiratory distress with episodes of sleep apnea. Prior to admission to the theSurbAstvatsamayr medical center, the patient consulted at a different hospital where they could not diagnose the tongue base cyst.In our hospital were made fibrolaringoscopy, CT, somnography, laboratory tests. On the basis of the obtained data was diagnosed:Congenital tongue base cyst. Laryngomalacia

Treatment:Resection of the cystic mass at the base of the tongue was performed using a transoral approach. Under general endotracheal anesthesia aspiration of the contents of the cyst was performed.The contents of the cysts were a glue-like liquid.The cyst with menbrane was completely resected using a high-frequency coagulator. The resected cyst mass was sent for pathological evaluation.Pathohistological data: the cyst lined with non-keratinized stratified squamous epithelium

In the early postoperative period, a pronounced regression of the above described clinical symptoms was observed.

Discussion. Laryngomalacia is the most common cause of neonatal stridor. The congenital cyst of the basal cyst is an unusual but potentially dangerous cause of stridor in newborns and infants. When laryngomalacia, almost 90% of cases are resolved spontaneously, while cysts on the basis of the tongue can cause severe airway obstruction. They press on the epiglottis, displacing it backwards which can lead to death of the patient from asphyxia. The mortality for children with this diagnosis is about 40%. The clinical symptoms of these diseases are largely similar, so their combination can cause difficulties in diagnosis. Referring to one of the diseases, one can not notice the other. Especially dangerous if the root of the tongue remains unnoticed. As it was in our case.For primary diagnosis, we recommend the use of a fibrolaringoscope or bronchoscope. Computed tomography and MRI help to clarify the diagnosis, and to conduct a differential diagnosis.Surgical removal of the cyst by a high-frequency coagulator had good results. In the early postoperative period, the respiratory distress and feeding difficulties disappeared. For 6 months, there was a weak stridor because laryngomalacia persisted

This observation is interesting for the combined case of a rare pathology of the congenital cyst of the root of the tongue and laryngomalacia.

Keywords:

tongue base, laryngomalacia, cyst,

COMBINED TECHNIQUES OF MYRINGOPLASTY FOR POSTERIOR PERFORATION

Introduction. At present, considerable experience has been accumulated on the issues of myringoplasty as an independent surgery and as the final stage of reconstructive and functional ear surgery. However, the successful morphological result of the surgeries (i.e., complete engraftment of the transplant and the stable closure of the defect) is not always observed.

In connection with this, the search for new methods of laying and fixing of the neotympanic membrane remains a and actual of great scientific and practical importance.

Method used. Method lies in the combined stacking and fixation of the temporal fascia or perichondrium through a window made on the handle of the malleus, which makes it possible to hold the neotympanic membrane just in a well-tensioned and fixed position.

Thus, we operated on 26 patients with chronic purulent otitis media in remission, when the perforation was located in the posterior parts of the tympanic membrane.Considering the fact that within our method the neotympanic membrane is already stretched, well fixed and provided with a full vascularization, we removed the hemostatic sponges in the ear canal on day 7.

Results and discussion. Thus, we operated on 26 patients with chronic purulent otitis media in remission, when the perforation was located in the posterior parts of the tympanic membrane.Considering the fact that within our method the neotympanic membrane is already stretched, well fixed and provided with a full vascularization, we removed the hemostatic sponges in the ear canal on day 7.

The results of the study showed that on the 7th day the vascularization of the neotympanic membrane of 23 patients from 26 operated, the fascia was light pink throughout the entire surface, in a stretched state, and a good capillary network was observed from the periphery of the fascia to the center. In the anterior parts of the tympanic membrane, the capillary network was mainly marked by the injection of vessels, as a reaction to surgical intervention. Regarding the other 3 patients, the capillary network did not reach the center, and the neotympanic membrane was not completly pale pinkness.

On day 14, the neotympanic membrane was pinkish in color with all 26 operated patients,apparent capillary network was observed throughout the surface, especially at the periphery.

On day 21 after the operation, the neotymanic membrane was pink, well stretched and sufficiently mobile with all operated patients and the capillary network was visible only on the periphery.

On the second month after the operation, all patients reported significant improvement in hearing, which was confirmed by audiometric studies.

Conclusion. On the basis of the obtained data, we concluded that the application of this technique provides:

- Reliable, good fixation of the neotympanic membrane.
- Early vascularization of the neotympanic membrane.
- Absence of a retraction or rejection.
- Early recovery of auditory function.

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Keywords:

chronic mesotympanitis, myringoplasty, neotymanic flap

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INTRANASAL DIPROSPAN INJECTION FOR CHRONIC RHINOSINUSITIS WITH NASAL POLYPOSIS TREATMENT

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Introduction. Chronic rhinosinusitis with nasal polyposis (CRSwNP) affects 0.5–4% of the world population and is present in ~20% of patients with CRS [1]. There are no definitive guidelines for the treatment of CRS largely due to the lack of consensus on the etiology of the disease. The management of chronic rhinosinusitis with nasal polyps, aimed at improving clinical symptoms, includes both surgical and medical treatments, but there is no universally accepted management protocol [3]. Topical treatment with intranasal corticosteroids (INCSs) has been widely used to control disease symptoms in patients with CRSwNP. INCSs can be classified as modern (mometasone, fluticasone, and ciclesonide) versus first-generation corticosteroids (budesonide, betamethasone, triamcinolone, and dexamethasone). However, the constant use of nasal sprays or drops causes the patient lots of inconveniences and impacts the quality of life, especially for people living active lifestyle. The aim of this study is to improve CRSwNP treatment by intranasal Diprospan injection.

Methods used. The clinical trial without control was conduct including 38 patients with CRSwNP . From 38 patients 23 had a history of radical bilateral Coldwell-Luc operation, which was carried out on the occasion of chronic sinusitis with polyposis and 15 patients were treated before by intranasal spray`s. Anterior rhinoscopy and computed tomography (CT) were the main method of clinical and radiological examination in this group of patients.

Three time injection of 1 ml Diprospan solution with 1 week and one month interval was done in the lateral wall of nasal cavity. Intranasal insulin needle prick conducted at a depth of 3-4 mm from the external nasal opening in the region of mucodermal fold. Aspiration probe was necessary before injection.

Results and discussion. The post treatment follow-up includes patient's complaints records (subjective) and anterior rhinoscopy and CT scan examination (objective) after six months and 1 year. All patients noted improved breathing, smelling and absence of rhinorrhea. Coronal and axial CT scan showed pneumatization of all sinusis and several residual small soft tissue masses in some sinuses.

Surgery has long been a treatment of choice for persistent CRS, and with the advent of endoscopy, most surgeries are now minimally invasive. However, when it comes to CRS with sinonasal polyposis, postoperative recurrence often occurred, even when aeration is improved [2].

In presented trial we have got clinical and radiological proved treatment of III and IV stages of CRSwNP by intranasal Diprospan injection. No adverse effects were reported in this patient's cohort.

Conclusion. In reported trial intranasal subdermal Diprospan injection represents as a safe therapy in a primary and postoperative management of CRSwNP. Intranasal Diprospan injection showed significant improvement in patients' symptoms, clinical and radiological imagine.

Keywords:

Chronic rhinosinusitis, Nasal polyposis, Diprospan injection

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OTOGENIC MENINGITIS AS A COMPLICATION OF SPONTANEOUS CEREBROSPINAL FLUID LEAK. CASE REPORT.

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Introduction. Spontaneous otogenic cerebrospinal fluid leak is a potentially life-threatening problem because meningitis risk is relatively high. Otogenic cerebrospinal fistulae may be challenging to identify, particularly if a patient has not been afflicted with meningitis. Most cerebrospinal fluid leaks originate in traumatic, infectious, or congenital temporal bone defects. Congenital deformities of the temporal bone include an anatomical connection from the subarachnoid space to the middle ear leading to a physiologic CSF leak.The diagnosis of CSF middle ear effusion requires a high degree of clinical suspicion. It has been recommended in the literature that any patient older than 50 years who has recurrent serous middle ear effusion should be suspected of having a CSF leak until proved otherwise. Surgical repair is recommended, regardless of the patient's age.

Methods used. This report describes the history of a 53-year old woman with a profound sensoryneural hearing loss, a related absence of vestibular function and a Mondini-type of temporal bone dysplasia who developed recurrent episodes of meningitis which were due to an idiopathic cerebrospinal fluid otorrhea. The patient did not experience the associated symptoms of hearing loss or vertigo since the affected inner ear was clinically unreactive. By surgically exploring the middle ear, the presence of a cerebrospinal fluid otorrhea was confirmed. The leak was observed to be coming from a defect in the stapes footplate and tegmen tympani, and it was controlled by firmly packing the inner ear vestibule and tegmen dehiscence with muscle, bone pate and perichondrium.

The patient improved, and at the 3-month follow-up, the discharge had resolved and no other sign of CSF leak was evident.

Discussion. The development of CT and MRI scans in more recent years has allowed a more detailed and specific classification of inner ear malformations and has provided a clearer understanding of the pathways in which spontaneous CSF fistula develops. According to the congenital origin theory, bony pathways that are present at birth either a widely patent cochlear aqueduct, a tympanomeningeal fissure, or an internal auditory canal communication with the vestibule can persist after birth and serve as routes for pathogens to enter the CSF space, causing meningitis.

Conclusion. Spontaneous CSF leak caused by a tegmen or oval window defect in adults can occur without any history of head trauma, temporal bone fracture, or meningitis. When an adult presents with aural fullness and persistent fluid in the middle ear, CSF leak should be suspected, especially if the patient does not have a recent history of upper respiratory infection, ear pain, trauma, or a nasopharyngeal mass. In these cases, if the etiology of the meningitis is obscure, a middle ear exploration should be performed both for diagnostic purposes as a means to ascertain definitely the presence of a leak and for therapeutic purposes to seal it effectively.

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Keywords:

Cerebrospinal fluid leak, meningitis, congenital deformities.

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DEVELOPMENT OF MATERIALS FOR SPEECH AUDIOMETRY

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Keywords:

speech audiometry, phoneme distribution, Armenian language

Introduction. Speech audiometry has become a basic tool in determining the type and degree of hearing loss. It provides information about person's communication abilities in natural listening environments and is very valuable for the assessment of the outcomes of hearing aid and cochlear implant rehabilitation.

One of the requirements of speech audiometry is that it needs to be performed in the listener's native language. The problem of lack and valid Armenian speech-audiometric materials is currently on the agenda and has become the basis for the current study.

The goal of the current research is to develop and implement speech-audiometric materials for native Armenian speakers.

Methods used. The Armenian language is an independent branch of Indo-European language family. It is the official language of the Republic of Armenia and the Republic of Artsakh.

According to the report by the National statistics service of the Republic of Armenia, the population of Armenia was 2.993.900 as of October 1, 2016. On the other hand, Armenian is widely spoken in the Armenian Diaspora, with about 8-12 million people living throughout the world. The largest communities outside of Armenia are in Russia, Iran, France, the United States, Canada, Syria, Lebanon, etc.

Results and discussion. The first step of our investigation requires careful selection of speech items based on the phonological structure of Armenian language, as the materials for clinical assessment of speech recognition has to be representative for the underlying language and homogeneous with respect to their intelligibility.

A fundamental study and calculations, which have been made to find out the phoneme distribution in the Armenian language showed that changes in the text (literary, scientific, verse) does not make any differences for the vowels: the most frequent vowel is always [ɑ] *, followed by [ɛ]. Only vowels [u] and [ə] sometimes change places (*the phonemes are described using the symbols of the IPA phoneme alphabet). Variations among consonants are bigger, however, the sonants [n/ŋ], [m], and [ɹ~ɾ] are among the most repeated phonemes and have the first six places in the phoneme distribution table. Then follow the consonants [s], [k] and [v], the position of which is different from each other by one or two places. On the last place in the table is the phoneme [f], when it comes to the literary text, but it is more commonly encountered in mathematical texts (due to the word function)[1].

Summarizing all the above mentioned, we can note, that the current review is only the small part of our investigation, which highlights the actuality of development of Armenian speech audiometry materials.

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