

Clinical case

Psychological Factors of Effectiveness in Speech Rehabilitation After Laryngectomy: a Case Study

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Abstract:

Relevance. The purpose of the study was to reveal and describe psychological factors of effectiveness in voice rehabilitation after laryngectomy. Authors submit the results of speech rehabilitation work of speech pathologist with patient M., who achieved alaryngeal communication without any limitations under conditions of extremely problematic state of health.

Description of the clinical observation. Rehabilitation of voice function was conducted according to an esophageal speech training method. To study in detail the motivation of patient M., a narrative psychological interview and standardized tests were conducted. Despite the poor health, a lot of complex diagnoses and poor preconditions for speech rehabilitation, patient M. showed great success in alaryngeal communication, which is not always typical for patients with less severe conditions for rehabilitation. **Conclusion.** The study shows that the effectiveness of the alaryngeal speech rehabilitation course after laryngectomy can be ensured by meaning work of personality, designing creative motivation, focusing on asserting and affirming life, and creating new meanings.

Keywords: psycho-oncology, speech alaryngeal, laryngectomy, interview psychological, speech-language pathology.

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1. Introduction

The problem of laryngeal cancer is currently unique in oncology. It is related to providing medical care for patients and developing and carrying out rehabilitation activities [1 – 6]. The treatment results, especially in patients without regional metastasis, are entirely satisfactory (about 80%). However, many researchers denote refusal of surgical treatment as one of the causes of mortality in laryngeal cancer. More often, the main motive of such a decision is a profound disability resulting from surgery. The most severe consequence of laryngectomy is the loss of sonorous speech ability and impaired respiratory function. Patients' appearance changes and they lose the ability to communicate verbally. Aphonia and breathing changes ensue – all of it leads to loss of communicative function of speech and the emergence of negative psychological personality traits. As a result, the patient faces many difficulties returning to work and active social life [7, 8].

Therefore, one of the most critical postoperative tasks and rehabilitation directions for patients, who have undergone a laryngectomy, is the voice function recovery, which gives patients the opportunity to return to social life and work. Most researchers believe that voice function recovery after such surgeries is a priority direction of rehabilitation: voice function should be recovered after each laryngectomy [9 – 11].

Since the first laryngectomy (1873, T. Billroth), the search for the most effective ways of voice function recovery after such surgeries continues. There are several main directions of voice function rehabilitation. Among the most popular forms of voice rehabilitation, there are esophageal speech and tracheoesophageal speech.

Esophageal speech (ES) is a method of speech production that involves oscillation of the esophagus when air is injected into the upper esophagus and then released in a controlled manner to create a sound for producing sonorous speech. It is a learned skill that requires specific work of the patient with a speech pathologist.



In a tracheoesophageal speech (TES), a surgical fistula (TE puncture) is created in the wall separating the trachea and esophagus, allowing the placement of a phonatory prosthesis for producing sonorous speech.

Using an artificial larynx (AL) – a handheld device that is pressed against the neck and creates vibrations that produce a sound while the patient moves his or her mouth to create speech.

An issue status of voice function rehabilitation and a variety of speech rehabilitation methods after laryngectomy make it necessary to choose the preferred speech rehabilitation method not only after discussion within a multidisciplinary team but with patient informing about all available variety of speech rehabilitation methods after laryngectomy. If medical indications allow several speech rehabilitation methods – it is the patient's prerogative to choose the one to be used.

Voice prosthetics and tracheoesophageal bypass after laryngectomy are common in the world [12 – 17]. Nevertheless, esophageal speech is associated with a significantly higher physical functional capacity [18]. In Russia, for example, patients often refuse to use voice prosthetics and tracheoesophageal bypass – due to short periods of using them and the recurrent need to replace the prosthesis. They prefer to seek help from speech pathologists as a traditional method of voice function recovery by learning to use esophageal speech [19]. This method is characterized by non-invasiveness (there is no need for a new surgery to recover speech). As a result of speech therapy sessions, the persistent skill of using the mechanism of outlaryngeal phonation replacement is developed.

Modern scientific research shows that using methods of voice function recovery in patients who have undergone a laryngectomy can increase the effectiveness of voice rehabilitation up to 92%. It can also reduce the number of patients recognized as disabled by disease by 20%; it can return the working-age patients to the workplace and significantly improve their social adaptation and quality of life [20, 21]. According to our data, the vast majority of patients (94%) who completed a full speech rehabilitation course – were discharged with full recovery or significant improvement of speech function.

Cancer diagnosis certainly is a traumatic factor. However, a person is not only exposed to stressors – but has the ability to show resilience and cope with psychological trauma [22 – 25]. Modern psychological researches show more and more proof that there are three main types of trauma effects: disorder – resilience – growth [26, 27]. Patients after laryngectomy suddenly find themselves in an unaccustomed life, but our narrative psychological interviews, conducted with such patients, show that most of them (77%) are future-oriented and have clear ideas of what they will do after leaving the hospital.

We consider the cooperative work of a psychologist and a speech pathologist to play an essential role in the process of alaryngeal speech rehabilitation within the multidisciplinary approach, which provides for the optimized method of speech rehabilitation. However, it cannot be denied that speech rehabilitation results depend a lot on the patient's desire and motivation to recover the lost speech.

2. Patients and Methods

In this sense, indicative, in our opinion, is the particular case of alaryngeal speech rehabilitation in the patient M., 59 years old, admitted to the Oncology Department №2 (head and neck tumors) of Central Clinical Hospital "RZD-Medicine" with a diagnosis of laryngeal squamous cell carcinoma. 10.08.16 – lower tracheostomy was performed in case of larynx tumor stenosis. Total laryngectomy and resection of the thyroid gland were performed on 23.11.16.

On the 7th day after the operation, there was an episode of gastric bleeding, the source of which was acute ulcers of the stomach and duodenum. On 02.12.16, there was a relapse of stomach bleeding. According to the ulcer's size, amount of blood loss, ineffective attempts of endoscopic hemostasis – emergency gastrectomy was performed 02.12.16. Postoperative period without complications.

The patient entered the course of speech rehabilitation with complaints of expressed difficulties in verbal contact. Before this, discussing the opportunities of speech rehabilitation, the multidisciplinary team decided to reject tracheoesophageal speech due to its invasiveness. Patient M. was offered to choose from the two methods – electrical larynx or esophageal speech. We will note that the success of voice recovery with esophageal speech was also uncertain for the multidisciplinary team due to the burdened surgical history. However, patient M. chose esophageal speech.

09.08.2017 Local Ethical Committee approved the application of the selected speech rehabilitation method for patient M. Patient M. has given his written informed consent. The research was conducted ethically in accordance with the World Medical Association Declaration of Helsinki.

During the first consultation on 14.08.2017 communication was carried out partly in writing, actively using non-verbal communication such as gestures and facial expressions. The initial conversation was marked by spontaneous, uncontrollable outbursts of sounds/esophageal speech. Af-



ter the conversation, which reflected the essence of the disorder and the possible ways of its correction, the patient confirmed his intention to recover the lost sonorous speech with the help of pedagogical methods of rehabilitation of verbal communication (esophageal speech).

The pedagogical method of speech rehabilitation after laryngectomy is based on the development of the mechanism of laryngeal phonation replacement, where the sound generator is the folds of the mucous membrane of the mouth of the esophagus. Timbral coloration and the possibility of phonemes formation are carried out by the preserved anatomical structures of the upper resonator. The main difficulty in using this speech method is to provide the energy base of the phonation, delivery of an air jet. The esophagus takes the air tank's function, but, of course, it cannot provide the required volume of exhalation, like that of a normal speech. In this regard, the success of recovery in the case of patient M. was highly doubtful due to the presence of several factors: a history of strokes in the basin of the anterior cerebral artery from 2000; myocardial infarction from 05.12.16; operations on the organs of the gastrointestinal tract; general somatic weakness. All of these could have a negative impact on the formation of a new sound generator and the energy base of the phonation.

Alaryngeal speech rehabilitation was conducted according to an esophageal speech training method.

Logopaedic work was carried out in four stages:

preparatory stage – conversations, explaining to the patient his health status and possibilities to rehabilitation, work on breathing;

formation of mechanisms of laryngeal speech replacement (we used various techniques that allow the patient to receive the first short sound of voice both on the traditional material of consonants P, T, K and on the material of vowels);

mastering skills of using alaryngeal speech on the easy speech material within elementary everyday situations;

working on automating capabilities of using alaryngeal speech and introducing it to everyday speech (extending sound range, improving modulations, training voice endurance, etc.).

Despite the poor health, many complex diagnoses and poor preconditions for speech rehabilitation, patient M. worked hard to form alaryngeal speech. The therapy was conducted by a speech pathologist with the support of a psychologist.

Patient M. underwent two courses of speech therapy for 10 days each. During each course, he was trained in 3 sessions lasting 5-7 minutes daily, taking into account his somatic weakening. To consolidate developed skills, independent work tasks were proposed and were recommended to be performed for 5 minutes 8-10 times daily. During the one-month interval between the courses, an independent work program was also proposed to consolidate using alaryngeal speech. In addition, patient M. had an opportunity to contact the speech pathologist online in case of any questions while completing tasks.

Patient M. did not miss classes, performed all tasks assigned by the speech pathologist, and showed great success in speech rehabilitation, which is not always typical for patients with less severe conditions for rehabilitation. At the end of the course, patient M. used verbal communication successfully. An acquired skill allowed him to use alaryngeal communication without difficulties, including telephone communication. The sound had sufficient strength and volume, the duration of the sounding phrase was 4-5 words. The maximum phonation time of vowel sounds was 1.06 seconds. So, logopaedic work with patient M. was completed with high efficiency in the esophageal speech development in a relatively short time despite the poor health and poor preconditions for speech rehabilitation.

During the speech rehabilitation process, we suggested an essential role of the psychological features of patient M. in the excellent results of his rehabilitation. To reveal and describe them, at first, we conducted a narrative psychological interview. We asked patient M. to make narratives, talk about his life, including a number of significant aspects of life situation: about his diagnosis history; about his family, about his work, about his friends and acquaintances; about his relationship with others after diagnosis and surgery; about his plans after hospital discharge. Based on the results of the narrative psychological interview, we decided to use (additionally) the Achievement motivation test and the Affiliation motivation test, developed by A.Mehrabian and modified in Russia by M.Sh.Magomed-Eminov [28, 29] to further investigate his motivation.

3. Results

According to the analysis of narrative psychological interview with patient M., it revealed, that most of his statements, despite the extremely problematic state of health, are directed to the life, to the future, to creation: "I want to live," "I have a desire to work", "I love my grandson", "I love my family," "I will restore order in the house" and others. Patient M. did not speak negatively or accusingly about anyone or anything (the most "negative" of his statements about the people around him: "there are those who shun"; but at the same time, basically: "the relationship has not changed, I was respected before, and now"). While it is objectively difficult, he is set on creating



something new, contributing to his grandson's upbringing and the life of his family as a whole. Then we resorted to the Affiliation motivation test, which showed us an unexpected result: a low affiliative tendency in combination with a high sensitivity to rejection. According to the standard interpretation, patient M. actively avoids contact, seeks solitude, and is a difficult patient for a speech pathologist. But let us return to the analysis of the narrative psychological interview and, specifically, pay attention to the results of the Achievement motivation test that showed striving for success as his result tendency. Contrary to illness, patient M. is oriented to success in anything he does, he attaches great value to his family and tries to participate in its everyday life, he constructs his life world in new conditions for himself, aimed at the continuation of life, creation, creativity, and rehabilitation. We observe a comprehensive motivational combination: striving for success and high sensitivity to rejection in conjunction with his desire to live and work, participate actively in his family's life – and we suggest that such combination became an important factor of success in alaryngeal speech rehabilitation results of patient M.

4. Discussion

Not long ago, the very fact of turning to an oncologist tore the person from an existing worldview and transformed him/her into a stereotype of an “oncological patient”, inseparably linked to the notion of inevitable death and the formation of the motive for preparing for death, pushing aside all other leading motives. Modern possibilities of medicine allow us to talk about shifting the emphasis in the lifeworld of a cancer patient from waiting for the end to continue living and building his/her life, relationships with self, other people, and the world around – the world with the illness, operation and the resulting disorder. The illness has changed the world in which the person lived before, into the world in which he needs to make peace with his condition and build life anew [22 – 25].

5. Conclusions

Our studies, as well as a particular case of a patient M., show that the success of a speech rehabilitation course (which is not a one-time process, but long work, requiring sustained motivation) can be ensured by designing creative motivation, focusing on asserting and affirming life and creating new meanings. Results of the case study allow us to determine the importance of rehabilitation motivation for effective alaryngeal speech rehabilitation after laryngectomy. We can also confirm the critical role of meaning work of personality in case of serious illness or complex defect that demand significant efforts of the speech pathologist and the patient in the speech rehabilitation process.

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The use of artificial intelligence: the article is written without the use of artificial intelligence technologies.

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