

SPECIFIC CHARACTER OF ARBITRARY REGULATION IN VARIOUS FORMS OF APHASIA

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Abstract. *The relevance of the research presented in this article is determined by the high prevalence of speech disorders among patients of various profiles. Currently, aphasia accompanies various diseases, which may naturally affect the formation and development of arbitrary regulation among this category of patients, disrupting their processes of self-control in behavioral and emotional reactions. The aim of the article is to identify the features of arbitrary regulation in case of sensory and motor aphasia. The method of studying of the outlined problem is the diagnosis of manifestations of human behavior at the level of arbitrary regulation. For this purpose, the tests "Serial Picture and Story Arrangement" and "Path Tracing" were used. They allow assessing the patient's abilities to concentrate attention, analyze speech text, and exercise emotional and motor self-control. The parameters identified during the study made it possible to distinguish differences in the manifestation of arbitrary regulation at the level of patients with motor and sensory aphasia. In case of sensory aphasia, aspects of low attention concentration and programming activity are observed; a high threshold of emotional excitability alongside with the unstable psycho-emotional sphere can be detected.*

At the same time, patients with motor aphasia demonstrate the ability to concentrate attention on task performance, stability of psycho-emotional indicators, and high abilities of understanding and analyzing the speech addressed to them.


The data obtained during the study will allow specialists to improve the diagnostic, communicative, and neurorehabilitation procedures, thereby enhancing the possibilities for speech restoration in patients with aphasia, which may have practical value for the medical-social sphere.

Keywords: *aphasia, speech disorder, arbitrary regulation, speech functions, sensory aphasia, motor aphasia.*

INTRODUCTION

One of the crucial functions of humans that determines their social and personal interactions is speech function. Speech holds vital significance in the life of every individual [1]. Through speech, a person expresses feelings, reflects attitudes towards things, defines their perception of the world, and articulates thoughts, requests, and knowledge. Therefore, speech function becomes paramount in understanding any aspect among other people, whether they are relatives, acquaintances, or in society at large, marking its role in communication, which, depending on the degree of eloquence in speech rhetoric, contributes to the formation of a friendly atmosphere, interpersonal safety, mutual interest, knowledge acquisition, or conversely, misunderstanding, conflict development, and the creation of an impression distorting the reality of circumstances, ultimately leading to the logical and purposeful determination of subsequent actions, effecting the fate of individuals, personalities, or often even groups of individuals, populations, associated with the situation of interpersonal interaction (expressed speech) [2].

Thus, speech itself, its proficient mastery, the ability to use speech function in all its components, including intonation, tone, volume, phonetic, intellectual, and other parameters, which only collectively determine and evaluate a person's speech as a whole, reflect their personal health, encompassing both physical aspects and psycho-emotional and social aspects. In this regard, great importance is attached to arbitrary regulation of speech activity [3]. It is through this function that a person can consciously manage their speech depending on the task, aiming to achieve a specific effect, stemming from their personal speech reproduction. In arbitrary regulation, the basic



principles of managing mental and emotional reactions are defined, which will be expressed in various parameters of a person's speech, collectively having a certain and systematic influence on others or the interlocutor in particular [4].


At the same time, in recent years, there has been an increase in diseases that disrupt speech function. It is worth noting that these indicators have become characteristic for individuals in any age group. This creates the relevance of the growing medical-social problem associated with speech function impairment and the development of aphasia, which accompanies many pathological conditions in the modern stage of medical science development. Additionally, a number of modern treatment methods create conditions for damaging the structural units linking speech function, such as the method of artificial lung ventilation, which has been extensively used in the clinic in recent years for various pathologies: pulmonary, infectious, cardiovascular, neurological, and others. Cranial-cerebral traumas, concussions, injuries, strokes, genetic diseases, intellectual disorders, nervous disorders, neurotoxicities, mental disorders, states after neurosurgical interventions, and other pathologies contribute to speech impairment to some extent. It should be noted that individuals in the working age group are more likely to suffer from aphasia, which increases the factors of relevance of the considered pathology [5].

Complete or partial loss of speech is often represented by two mechanisms of development, which allow distinguishing between sensory and motor aphasia. Considering the features of arbitrary regulation in case of these forms of aphasia reveals the importance of defining its characteristics related to the typical formation of voluntary speech reactions due to behavioral criteria expressing personality. After all, a person's mental function, the patient's speech level in case of aphasia will be determined by their level of behavior organization, which includes forms of intentional personal action, including speech [6]. Thus, at the level of arbitrary regulation, speech function in different forms of aphasia will have various aspects that will allow neurorehabilitation specialists, speech therapists and other specialists to more deeply understand a patient with aphasia in the factors occurring at the mental level in him, processes associated with both the physical manifestations of the disease and psycho-emotional reactions against the background of his speech statements, which will allow them to carry out more targeted treatment, rehabilitation and diagnostic procedures, which will improve the structure of care for this group of patients as a whole. This dictates the identification of features of arbitrary regulation in patients with different forms of aphasia: sensory and motor, reflecting the relevance of the study.

MATERIALS AND METHODS

The current research applied diagnostic parameters to determine the features of voluntary regulation in sensory and efferent-motor aphasia, reflecting the patient's friendly actions at the level of their formed mental functions and cognitive indicators in the factors of expression during speech activity, a consciously formative parameter in the target definition. The criteria under consideration were identified during testing using a method developed by A. Sh. Tkhovtov et al. as "Serial Picture and Story Arrangement," in which patients were asked to determine the sequence of actions presented in the form of images, accompanied by a sequential narrative of the situation (objectively, visually). This test exposed elements reflecting the disruption of action sequences in factors of possible activity programming impairment at the level of visual perception of the storyline on the card, reduction or fragmentation of actions, as well as emotional-behavioral reactions. Another diagnostic test was the "Path Tracing" test. This neuropsychological method allows examining the degree of ability and skill to switch between visual perceptions and performing the task of connecting cards with sequential numbers.

The methods used in the research create conditions for determining the speed of perception of the presented information, visual perception and attention, which has the prerequisites for creating a stimulus for subsequent action, the formation of a reaction to the choice of personal action, emotional reactions at the level of solving a cognitive task, the development of personal sensorimotor manifestations against the background of solving a problem posed during testing, self-



expression in the implementation of the cognitive task of the communication series, including self-control and fulfillment of the target task of the test in multifactorial personal manifestations, which in general makes it possible to identify the features of the manifestation of a patient with aphasia at the level of arbitrary regulation of activity [7].

When calculating the obtained research data, the standard method of mathematical calculation of results was used.

The presented study was conducted at the Arazi Hospital and Razi Polyclinic in Tabriz, Iran. As part of this research, diagnostic testing was conducted among 60 patients diagnosed with aphasia. The age group of the subjects was from 38 to 64 years old. All patients were divided into two groups. The first group consisted of 30 patients with sensory aphasia (of different nosologies); the second group included 30 patients with motor aphasia (of different nosologies). Thus, the comparison groups consisted of patients with speech disorders of various types, manifestations and genesis.


This study on the problem under consideration was carried out in three consecutive stages. At the first stage, an analytical and theoretical study of scientific, research and methodological literature was carried out on the peculiarities of the formation and development of arbitrary regulation of human activity, on the study of various forms of aphasia and manifestations of arbitrary regulation in speech disorders of various origins. As a result, the actual problem, purpose, research methods were identified and a work plan was drawn up. At the second stage, a diagnostic study of patients with sensory and motor aphasia was conducted to identify their indicators and features associated with their arbitrary regulation. Further, an analysis of the results obtained and the basis for systematization of the results obtained were made, conclusions were formulated. At the third stage, the results were clarified, conclusions were drawn, which were formulated on the basis of the data obtained.

RESULTS AND DISCUSSION

The processing of the obtained results of this study was carried out on the basis of a system-analytical approach, where a detailed analysis of the test results obtained according to the selected methods in the studied patients with motor and sensory aphasias was carried out in order to identify the features of their arbitrary regulation, which affects the restoration of their speech function in patients, allowing to find ways to improve interaction with persons with aphasias based on their various forms and to improve the issues of diagnosis and neurorehabilitation in this group of persons.

The features of arbitrary regulation make it possible to form prerequisites for human activity at the level of behavioral and emotional reactions that interact with his self-expression at the level of speech. In case of speech impairment, this factor is of particular importance, since it allows you to better understand a person (patient), form common parameters with him at the level of interaction; develop ways to solve this issue, where provoking criteria that cause negative reactions and actions in a patient with aphasia will be excluded [7].


Initially, it is known that the formation of behavioral-emotional-speech reactions is associated with a human mental activity. It should be noted that any, even involuntary, action of a person on the internal level is personally "spoken out or lived in an active aspect" (on a mental level). Even at first glance, an unconscious action has internal prerequisites for its accomplishment, which means that it was previously considered in one form or another in a mental form, reflecting an ideomotor type of personality activity, which later creates fundamental reactions so that a person reproduces them on a physical level in the form of behavioral, emotional or speech reactions, as well as when they are combined at the level of arbitrary regulation, which for a person are a motor and emotional manifestation. This is reflected in the social, educational, environmental aspects, where everything previously seen, heard, felt or done at the physical activity level becomes a formed mechanism that further allows a person to manifest himself at this level, which increases or decreases in the criteria of temporary factors of the individual's stay in the conditions of the considered situational impact or influence, as well as motivation to achieve the target indicator facing a person at the level of his moral and other personality qualities [8].



However, with aphasia, which reflects a speech disorder, the factors of communication interaction are disrupted, and at the same time, due to the presence of formed arbitrary regulation, a distorted picture of self-expression of a person who cannot fully express himself in society, at home or in public places, in a professional environment, does not have the opportunity to explain his feelings and needs, and seeing, in his opinion, the "wrong" reaction to his self-expression from others, he is provoked to develop a line of certain behavior (motor reactions, actions) with an emotional coloring, which will reflect his internal state against the background of violations in communication and understanding with others, as well as at the level of personal aspects characteristic, based on the importance of the situation that has developed for the personality of a patient with aphasia, which increases or decreases against the background of reactions of surrounding people and interlocutors. These factors associated with arbitrary regulation are also associated with the type of aphasia, which have features at the morpho-functional level, reflecting the line of a certain stereotype in this [9].

This research considers both types of aphasia sensory and motor. With motor aphasia, the functional speech apparatus suffers, which allows reproducing sounds, words and more in various parameters. This condition is associated with a physical pathology that has disrupted the musculoskeletal interaction in the speech apparatus. Thus, patients with motor aphasia, in the absence of other concomitant pathological aspects related to the cognitive-intellectual sphere, clearly understand the speech addressed to them and try to respond to it in a verbal or active form (motor reactions), which fully prevents them from making the physical pathological criteria of nosology that caused aspects of motor aphasia. A number of patients with motor aphasia cannot utter a word, while others partially and often involuntarily pronounce words or even phrases against the background of mental activity, which becomes consciously difficult for them in the future, given the lack of coordinated work of the muscles of the speech apparatus, which are restored already at the end of the rehabilitation cycle in the factors of the phasing of movement restoration, which is physical level and speech [10].

With sensory aphasia, patients retain the physical, morpho-functional ability to pronounce sounds and words, but their perception and understanding of them is impaired [11]. With sensory aphasia, there is a breakdown in the analysis of what is heard, which produces from the outside the appearance of an inadequate response of speech interaction on the part of the patient. These parameters indicate the development of alienation in behavioral and emotional reactions from target factors in a communication situation. A patient with sensory aphasia hears speech addressed to him at the internal level as a distorted information line. For him, there is no stability in the sound of words, which is especially evident at the level of a long story or speech address to it, in which he loses the line of meaning and perception of what was said already in the first stages, beginning to think about what was said to him on his personal internal level in the factors of personal perception of what was said in associative or other criteria. Moreover, his personal response, based on the misunderstood meaning of the speech addressed to him, often produces a set of unrelated words, which perhaps at the mental level have a connected story, but given the low speed of external reproduction of words in comparison with his mental processes, they are voiced by him partially and fragmented from different categories of expressions, which for the interlocutor becomes separate unrelated words [12]. Therefore, speech with sensory aphasia becomes unproductive and causes misunderstanding on the part of the listener, defining his natural reaction in certain life situations, which is different from the patient's understanding, based on what he said in his personal perception as connected speech at the internal level. This creates an atmosphere of communication conflict, where everyone (the patient and his interlocutor, doctor or relative, etc.) tries to talk about his own, without achieving the target task facing the conversation, and this often causes sharp emotional reactions in patients, which are at the level of personal internal indignation and irritations try to "express" their opinion on a relative given in behavioral and emotional-motor forms, which is observed against the background of arbitrary regulation reactions [13].



Consequently, arbitrary regulation determines the volitional aspects of a person's manifestation, including during speech interaction at the level that is accessible to the patient, based on his pathological damage or condition, which also affects his mental functions at the level of the nervous system, which is in the body on morpho-functional and biochemical, humoral levels are interconnected. And in the temporary aspect, they are achieved in their natural reactions, based on third-party influence and the reaction of any interlocutors as a misunderstanding or incompetent building of relationships from a selected position, which aggravates the general and private processes of speech restoration, as well as motivation for personal self-expression and speech interaction even in the form neurorehabilitation measures, which can be either improved or aggravated by incorrectly chosen tactics that are not sensitive to the personal characteristics of the patient with aphasia [14].

Thus, the presence of aphasia in a patient at the level of arbitrary regulation allows him to form a stereotype of his behavior in motor, behavioral and emotional reactions to certain speech or command (set a task to perform) interactions. In this regard, arbitrary regulation is considered as a programmed function of the external reaction of a patient with aphasia in connection with the speech addressed to him, which will be different and often depend on the form of the address or the person addressing the patient, who had experience of communication with him in the past and shaped him volitional attitude both to the form of communication and to one's personality [15].

It should be noted that what is described is also connected with the patient's formed internal speech, which is addressed to himself, as his attitude to what is happening or speech addressed to him in a certain form or the person addressing him, who has already made a previously determined impression on the patient, which he personally (the patient) was at the mental, internal level of speech addressed to oneself (thoughts) in the factors of his personal attitude in this matter, spoken and formed as his personal opinion. Subsequently, similar aspects associated with similar speech in any aspect or with a personality image will, at the level of voluntary regulation in the patient, have an external output of speech or motor-emotional order in the volitional aspects of self-expression, reflecting the previously formed stereotypical behavior of his behavior [16]. This will also be reflected in the overall picture of the behavior of a person with aphasia, who will build his motor and emotional reactions depending on the personal goal of interaction in the volitional aspect of arbitrary regulation, as far as his somatic and psycho-emotional state allows him in connection with his pathology [17].

Within the framework of this study, patients with sensory and motor aphasias were tested to clarify their features of manifestation at the level of arbitrary regulation. The tests "Laying out serial pictures and plots" and "Paving the way" allowed us to identify their manifestations of arbitrary regulation in this action. The general aspect related to the individual pace of completing these tasks, the ability to concentrate on tasks, which reflects the level of volitional self-control, was analyzed. The peculiarities of speech activity and the motivation of its reproduction were also revealed during the tests, which in general made it possible to identify the peculiarities of the manifestation of arbitrary regulation in patients with motor and sensory aphasia

Thus, the research showed that patients with motor aphasia easily (100%) came into contact with a specialist who noted their high motivation (86.6%) to complete test tasks. The patients listened attentively to the speech of the specialist (100%) conducting the testing, performed the testing according to the instructions given to them (90%), tried to clarify the details of the testing to the extent of their speech and motor capabilities. During the tests, it was noted that all patients had an interest in completing the task, which manifested itself in a highly organized form, which reflects the formed indicators of arbitrary regulation at the level of the volitional aspect of performing a programmed action.

Patients with motor aphasia were balanced and maintained emotional calmness (100%) during both tests. The task they were offered was carried out at a normal and stable pace. They were active (100%) and used the capabilities they had in the motor aspect to complete the test task. In addition, their attention was determined within the framework of the task proposed to them, which did not have long breaks and moments of distraction. It should be noted that the testing took

place in the office and there was no extraneous noise or other external stimuli to which the patient could react within the framework of an adequate reaction in this study.

In the group of patients with sensory aphasia, distinct parameters were identified compared to those in the motor aphasia group.

Patients with sensory aphasia did not attentively listen to instructions (100%), occasionally uttered nonsensical words related to the ongoing activity (90%), which might have been their attempt to clarify the situation. They exhibited heightened motor activity and reactions (100%), reflecting internal agitation. Respiratory-articulatory spasms were observed in some of them (83%). Throughout the testing, they appeared disorganized and displayed an unstable interest in the tasks (100%).

When observing patients with sensory aphasia when performing tasks, it was noted that most had aspects of emotional irritation and an increased emotional background in factors conducive to a conflict situation. They manifested themselves against the background of a personality unable to maintain constant attention to the performance of the task given to them, as well as the task they performed was not stable and not correct, based on the instructions given to them (100%). All movements of their actions were intermittent (100%) and they were often distracted by third-party objects, got up from their chair or could walk around the office (46.6%).

It should also be noted that, in contrast to patients with motor aphasia, who correctly completed the testing tasks, patients of the second group with sensory aphasia simplified all tasks and completed them in fragments (100%) relative to the target aspect of the test.

As a result of the conducted tests, cardinal differences were revealed at the level of manifestation of arbitrary regulation in motor and sensory aphasia. With motor aphasia, there is a complexity of dynamic utterance of the speech line, but these patients have high personal control in actions, attention to what is happening and the analytical aspect of the parameters of the surrounding world, events and situations, while maintaining the possibilities of cognitive interaction at the internal level adequately to what is happening. At the same time, patients with sensory aphasia quickly lose interest in an action that has a monotonous character for them and does not support motivational and emotionally expressed statements from the outside (for example, a specialist) that will disrupt the cyclical nature of the action that has a long character and motivate them. Patients with sensory aphasia are prone to rapid arousal, are not attentive, are not emotionally stable, and have motor reactions that reflect their irritation or dissatisfaction, and more.

Thus, arbitrary regulation in motor aphasia has a high stable regulatory, volitional personal potential, in contrast to the characteristic similar indicators in patients with sensory aphasia. Patients with motor aphasia have the ability to build a clear algorithm of action with the factors of speech utterance. However, this is absent in patients with sensory aphasia, for whom planning processes are very complex and not typical, based on their somatic and psychoemotional state.

The factors identified during the study must be taken into account when creating communication chains with these categories of patients, and they will also help diagnose types of aphasia and can be used to build the most competent neurorehabilitation program [18].

Arbitrary regulation reflects the factors of self-manifestation and self-presentation of a person in any conditions, which are expressed in behavioral, active, speech, motor and emotional reactions. Various pathologies that disrupt the functioning of the nervous system and destabilize mental processes disrupt the processes of arbitrary regulation, which subsequently affects human behavioral activity in various parameters. Initially, arbitrary regulation is a predictor of the effectiveness of a person's life in both personal and every day, as well as social and professional manifestations [19]. It is from the level of its development and preservation (stability of health) in the factors inherent in healthy ontogenesis that the entire further line of human activity and self-manifestation, his reactions in society, in the world around him, his self-manifestation and personal influence on surrounding people and the world as a whole will be reflected. This shows the importance of restoring and preserving arbitrary regulation at the level of expensive ontogenesis, where a balance of creative self-expression with the preservation of personal interests and intelligent, cultural self-expression is manifested, reflecting tactics and politeness when interacting

with others and creative personal influence on the world and society, which will preserve the balance of well-being of life in society and in the world as a whole [20].

Thus, the revealed effective data on the peculiarities of arbitrary regulation in different forms of aphasia will allow to predict aspects related to the further interaction of a patient with aphasia with others, dictating the importance of conducting neurorehabilitation therapy for this category of patients, taking into account the identified results, which will more competently help the specialist create conditions for interaction with patients with sensory and with patients with motor aphasia, directing his neurorehabilitation activity aimed at restoring healthy psychophysical parameters of arbitrary regulation.

CONCLUSIONS


The arbitrary regulation of a person reflects his self-control, which he uses in any of his activities. However, a number of diseases disrupt the processes of arbitrary regulation, and the conducted study, reflecting the indicators of arbitrary regulation in different forms of aphasia, indicates that with currently widespread pathology as aphasia, which has different types, there are features of arbitrary regulation that will be characteristic of one or another of its manifestations. The studied patients with sensory and motor aphasia proved this fact. Thus, according to the data obtained during the study, arbitrary regulation in patients with motor aphasia is expressed in the criteria of self-control, the ability to focus on the necessary aspect (task, goal), the ability to analyze data, a high understanding of the interlocutor's speech, unlike patients with sensory aphasia, who have a pronounced background of psychoemotional instability in self-manifestation when performing test tasks, rapid emotional excitability, low self-control, reduced understanding of the interlocutor's speech and minimal ability to concentrate one's personal attention on something.

Therefore, the identified performance indicators deepen theoretical and diagnostic indicators for various forms of aphasia at the level of arbitrary regulation, which can be successfully applied in the formation of communication tactics with patients with aphasia and the construction of a neurorehabilitation program, which would improve the results of recovery of patients with aphasia, returning them the opportunity to actively interact with others in the factors of restoring their speech functions and indicators of stabilization of self-control at the level of arbitrary regulation.

This article will be useful for workers in the medical, pedagogical, speech therapy and neurorehabilitation fields and can be applied in practice, which will contribute to solving important tasks in the field of diagnosis, treatment and recovery of patients with aphasia.

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