CAUSES AND TYPES OF ANARTHRIA SPEECH DEFICIENCY

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Abstract: This article provides a scientific overview of the factors contributing to anarthria speech disorder, its formation mechanism, clinical manifestations, and classification from the perspective of speech therapy and neuropsychology. The neurological basis of this condition, the pathogenesis associated with damage to brain structures, and classifications proposed by foreign researchers are analyzed.

Keywords: anarthria, dysarthria, speech apraxia, brain injury, bulbar disorder, neurogenic speech defects, articulation.

Anarthria - is a severe speech disorder characterized by complete disruption of voluntary movements of the speech apparatus, resulting in paralysis of the articulatory organs and total loss of oral speech. This condition, distinguished by its neurogenic origin, is the most severe form of dysarthria, where the patient cannot produce sounds or produces only very vague, incomprehensible sounds. Many researchers in the fields of speech therapy, defectology, and clinical neurology, including A.R. Luria's neuropsychological school, O. Bernstein, B. Ziegler, J. Kent, and P. Rosenbek, have extensively studied the mechanisms of anarthria.

The main cause of anarthria **is deep organic damage to** the speech control centers and their peripheral pathways. The most common etiological factors are:

1. Damage to the central nervous system

- **Stroke (ischemic or hemorrhagic) - damage to the cerebral cortex, subcortical structures, or brainstem.**
- **Traumatic brain injuries - damage to the brainstem, corticobulbar tracts, Broca's area.**
- **Tumors and neuroinfections (meningitis, encephalitis, neurosyphilis).**
- **Brain-affecting degenerative diseases:**
  - amyotrophic lateral sclerosis (ALS),
  - Parkinson's disease,
  - Huntington's disease,

- Severe stages of Alzheimer's disease.

According to the research of A.R. Luria and modern neurolinguists (Kent, Duffy), one of the most important structures controlling articulation are bulbar centers, damage to which is the main cause of anarthria.

- Paralysis of cranial nerves IX, X, XII
- bulbar poliomyelitis, myasthenia gravis, spinal cord degenerations
- facial nerve neuritis
- Severe myopathies of the tongue and throat muscles
- nerve damage after surgery
- perinatal encephalopathy
- oxygen deficiency (asphyxia)
- severe forms of cerebral palsy (CP)

Anarthria is a clinically severe form of dysarthria, at the core of which are the following pathological changes:

1. Complete paralysis of the articulatory muscles - voice is not produced due to the inability to move the tongue, lips, soft palate, larynx, and throat muscles.

2. Disruption of corticobulbar connections - when the pathways controlling speech movements from the cerebral cortex are disrupted, articulatory movement commands do not reach the peripheral organs.

3. **Loss of sensory-motor coordination** - speech movement automatism is disrupted, and elements of motor apraxia intensify.

4. **Complete loss of expressive speech** - the patient cannot produce sound, only noise, unclear sounds, or absolute silence is observed.

Based on foreign speech therapy (Duffy, Darley, Aronson, Brown classification) and the local scientific school of defectology, anarthria is divided into the following forms:

1. Central (cortical) anarthria
   - Deep damage to Broca's area and premotor regions.
   - Failure to form a speech movement program.
   - It often occurs together with motor aphasia.
2. Bulbar anarthria
   - It develops when the brainstem and bulbar nerve nuclei are damaged.
   - Complete paralysis of the articulatory muscles is observed.
   - It is accompanied by swallowing disorder and paralysis of the vocal cords.
3. Pseudobulbar anarthria
   - As a result of bilateral damage to the corticobulbar tract

- Occurs together with muscle hypertonia, spastic paralysis, and emotional lability.
- As the most severe manifestation of dysarthria, speech is completely lost.

4. Subcortical anarthria
   - Damage to basal nuclei
   - Muscle tone is severely disrupted, and speech is completely lost due to hyperkinesias.
5. Myopathic anarthria
   - In peripheral neuromuscular pathologies with muscle dystrophies or myasthenia gravis.
   - Muscle strength is insufficient to produce speech.

Distinguishing anarthria from other speech disorders

Speech disorder	**Main feature**	**Presence of speech**	**Cause**
Anarthria	Complete paralysis of articulatory muscles	**None**	Severe nervous system damage
Dysarthria	Articulation is impaired	Partially present	Central or peripheral damage
Aphasia	Language system disorder	Voice is present, but incorrect	Cerebral cortex damage
Speech apraxia	Disruption of motor programming	Voice is present, many attempts	Premotor cortex damage

Anarthria is a severe speech disorder of neurological origin, characterized by the complete loss of verbal speech due to total disruption of the articulatory apparatus function. Its causes are associated with damage to the central and peripheral nervous systems, bulbar injuries, degenerative diseases, and congenital pathologies. Modern neurolinguistics and speech therapy are creating an important scientific foundation for classifying anarthria, differential diagnosis, and developing corrective approaches.

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