

**PROGNOSTIC SIGNIFICANCE OF CLINICAL, ELECTROPHYSIOLOGICAL, AND
IMMUNOLOGICAL CHANGES IN FACIAL NERVE NEUROPATHIES ASSOCIATED
WITH CHRONIC SUPPURATIVE OTITIS MEDIA**

Alizot Axtam ugli Rahmatov¹, Dilbar Tadjievna Khojjeva², Asqar Hamroqulovich Rajabov³

**¹ PhD, Associate Professor, Department of Otorhinolaryngology, Bukhara State Medical
Institute named after Abu Ali ibn Sino, Bukhara, Uzbekistan**

E-mail: drnakhir@gmail.com

ORCID: 0009-0002-2487-3693

**² Doctor of Medical Sciences (DSc), Professor, Head of the Department of Neurology, Bukhara
State Medical Institute named after Abu Ali ibn Sino, Bukhara, Uzbekistan**

E-mail: dr.tadjievna@mail.ru

ORCID: 0000-0002-5883-9533

**³ Doctor of Medical Sciences (DSc), Associate Professor, Tashkent State Medical University,
Tashkent, Uzbekistan**

E-mail: doctorrajabov1976@gmail.com

ORCID: 0009-0000-2251-0675

Background

Facial nerve neuropathies represent an important clinical problem among disorders of the peripheral nervous system and may lead to paresis of the facial muscles, facial asymmetry, incomplete eye closure, synkinesis, contractures, and varying degrees of residual neurological deficit. Although peripheral facial nerve injury may be caused by various etiological factors, long-standing purulent inflammatory processes of the middle ear are of particular clinical importance.

In chronic suppurative otitis media, persistent inflammation, cholesteatoma, granulation tissue, destructive changes in the temporal bone, and involvement of the facial nerve canal may contribute to compressive, ischemic, demyelinating, and axonal mechanisms of facial nerve damage. However, the clinical severity and subsequent functional recovery of facial nerve neuropathy are not determined solely by otological changes. The electrophysiological condition of the nerve, the degree of axonal degeneration, and the intensity of systemic immune-inflammatory responses may also substantially influence the course and prognosis of the disease.

Therefore, comprehensive assessment of clinical-neurological, electrophysiological, and immunological changes, evaluation of their interrelationships, and determination of their prognostic significance for functional recovery in facial nerve neuropathies associated with chronic suppurative otitis media remain relevant scientific and clinical objectives.

Objective

To determine the relationships among clinical-neurological, electrophysiological, and immune-inflammatory changes in facial nerve neuropathies associated with chronic suppurative otitis media and to evaluate their prognostic significance for functional recovery of the facial nerve and disease outcome.

Materials and Methods

The study is planned to include patients diagnosed with peripheral facial nerve neuropathy associated with chronic suppurative otitis media.

The clinical and neurological status of the patients will be evaluated using the **House–Brackmann grading system** and the **Sunnybrook Facial Grading System**. The degree of facial muscle paresis, forehead movement, eye closure, nasolabial fold symmetry, movement of the oral commissure, facial symmetry, synkinesis, and the presence of contractures will be assessed.

To objectively evaluate facial nerve function, electroneurography and electromyography will be performed. The following parameters will be analyzed: compound muscle action potential (CMAP) amplitude, distal motor latency, the ratio of affected-to-unaffected side measurements, spontaneous denervation activity, and motor unit potentials.

The functional status of the facial nerve reflex pathway will additionally be assessed using the blink reflex, including evaluation of the latency and presence of the R1 and R2 components.

To assess immune-inflammatory activity, serum levels of **interleukin-6 (IL-6)**, **tumor necrosis factor-alpha (TNF- α)**, and **C-reactive protein (CRP)** will be determined.

Otorhinolaryngological examination will include assessment of the duration and clinical form of chronic suppurative otitis media, active otorrhea, cholesteatoma, and granulation tissue. Computed tomography of the temporal bone will be used to assess destructive changes in the middle ear and mastoid region as well as the condition of the facial nerve canal.

Expected Results

A significant relationship is expected to be identified between the clinical severity of facial nerve neuropathy and electrophysiological abnormalities. Reduced CMAP amplitude, prolonged distal motor latency, increased denervation activity, and abnormalities of blink reflex components are expected to reflect the degree of functional and axonal facial nerve injury and to have prognostic significance for subsequent functional recovery.

Elevated levels of IL-6, TNF- α , and CRP are expected to be associated with a more severe clinical course of facial nerve neuropathy, more pronounced electrophysiological signs of degeneration, and

delayed functional recovery. The prognostic significance of these immune-inflammatory changes for clinical outcome will be assessed.

Comprehensive statistical analysis of clinical-neurological, electrophysiological, and immunological parameters is expected to identify factors independently associated with facial nerve functional recovery. Their individual and combined value in predicting unfavorable outcomes, including residual paresis, synkinesis, contracture, and delayed recovery, will be evaluated.

Scientific Novelty

The study will provide a comprehensive assessment of the relationship between the clinical-functional status of the facial nerve, the degree of electrophysiological impairment, and immune-inflammatory activity in patients with facial nerve neuropathy associated with chronic suppurative otitis media.

The individual and combined prognostic significance of the House–Brackmann and Sunnybrook grading scores, CMAP amplitude and distal motor latency, electromyographic signs of denervation, blink reflex parameters, and immune-inflammatory markers such as IL-6, TNF- α , and CRP will be determined for predicting functional recovery of the facial nerve.

Practical Significance

Comprehensive evaluation of the prognostic significance of clinical-neurological, electrophysiological, and immunological changes may facilitate early identification of patients at increased risk of unfavorable functional outcomes, residual facial paresis, synkinesis, and contractures.

The identified prognostic factors may provide a scientific basis for individualized risk-based follow-up, personalization of treatment strategies, planning of electrophysiological monitoring, and targeted neurorehabilitation in patients with facial nerve neuropathy.

Conclusion

In facial nerve neuropathies associated with chronic suppurative otitis media, assessment of otological findings alone may be insufficient to determine the severity of neurological impairment and predict functional outcomes. Integration of clinical-neurological evaluation with electrophysiological parameters and immune-inflammatory markers may allow a more objective assessment of facial nerve damage and improve individualized prediction of functional recovery.

Determining the prognostic significance of clinical, electrophysiological, and immunological changes may contribute to early assessment of an unfavorable course, identification of patients at risk of delayed functional recovery, and optimization of individualized treatment and neurorehabilitation strategies.

Keywords: facial nerve neuropathy, peripheral facial palsy, chronic suppurative otitis media, electroneurography, electromyography, blink reflex, CMAP, IL-6, TNF- α , CRP, prognostic significance.