



THE RELATIONSHIP BETWEEN NIHSS SCORE IN ISCHEMIC STROKE AND PATIENT FUNCTIONAL RECOVERY

Choriyeva Shaxzoda Baxodir qizi

Republican Scientific and Practical Center of Emergency

Medical Care, Surkhandarya Branch

Department of Emergency Neurology

Neurologist

shahzoda.ch1798@gmail.com

<https://doi.org/10.5281/zenodo.22247283>

Annotation: Ischemic stroke is one of the leading causes of disability and functional impairment, making early assessment of stroke severity and prediction of functional recovery clinically important. The aim of this study is to determine the relationship between the initial NIHSS (National Institutes of Health Stroke Scale) score and subsequent functional recovery in patients with ischemic stroke, as well as to evaluate the prognostic significance of NIHSS. During the study, patients' neurological status is assessed using the NIHSS, while functional recovery is evaluated using standardized functional assessment criteria. The association between higher NIHSS scores, greater neurological impairment, and less favorable functional outcomes is assessed. The findings are intended to evaluate the potential of NIHSS as an important clinical tool for determining the severity of ischemic stroke, predicting functional recovery, and selecting individualized treatment and rehabilitation strategies.

Keywords: Ischemic stroke, nihss, functional recovery, neurological deficit, stroke severity, prognosis, rehabilitation.

Аннотация: Ишемический инсульт является одной из основных причин инвалидизации и функциональных ограничений пациентов, поэтому ранняя оценка тяжести инсульта и прогнозирование функционального восстановления имеют важное клиническое значение. Целью настоящего исследования является определение взаимосвязи между исходным показателем NIHSS (National Institutes of Health Stroke Scale) и последующим функциональным восстановлением пациентов с ишемическим инсультом, а также оценка прогностической значимости NIHSS. В ходе исследования неврологический статус пациентов оценивается по шкале NIHSS, а функциональное восстановление — с использованием стандартизированных критериев функциональной оценки. Оценивается взаимосвязь между более высокими показателями NIHSS, выраженностью неврологического дефицита и менее благоприятными функциональными исходами. Полученные результаты направлены на оценку возможности использования NIHSS в качестве важного клинического инструмента для определения тяжести ишемического инсульта, прогнозирования функционального восстановления и выбора индивидуальной лечебно-реабилитационной тактики.

Ключевые слова: ишемический инсульт NIHSS, функциональное восстановление, неврологический дефицит, тяжесть инсульта, прогноз, реабилитация.

Annotatsiya: Ishemik insult bemorlarning nogironligi va funksional cheklanishining asosiy sabablaridan biri bo'lib, insult og'irligini erta baholash hamda funksional tiklanishni prognozlash muhim klinik ahamiyatga ega. Ushbu tadqiqotning maqsadi ishemik insult bilan

kasallangan bemorlarda dastlabki NIHSS (National Institutes of Health Stroke Scale) ko'rsatkichi va keyingi funksional tiklanish o'rtasidagi bog'liqlikni aniqlash hamda NIHSSning prognostik ahamiyatini baholashdan iborat. Tadqiqot davomida bemorlarning nevrologik holati NIHSS shkalasi, funksional tiklanishi esa standart funksional baholash mezonlari asosida o'rganiladi. NIHSS ko'rsatkichining yuqoriligi nevrologik defitsitning og'irligi va funksional tiklanishning noqulayroq natijalari bilan bog'liqligi baholanadi. Olingan natijalar NIHSSni ishemik insultning og'irligini aniqlash, funksional prognozni baholash va individual davolash-reabilitatsiya taktikasini tanlashda muhim klinik vosita sifatida qo'llash mumkinligini ko'rsatishga qaratilgan.

Kalit so'zlar: ishemik insult, nihss, funksional tiklanish, nevrologik defitsit, insult og'irligi, prognoz, reabilitatsiya.

Ischemic stroke is one of the most pressing challenges in modern neurology and remains a major cause of mortality, long-term disability, and reduced quality of life. Functional outcomes following stroke depend not only on the extent and location of cerebral injury but also on the severity of the initial neurological deficit, patient age, pre-stroke functional status, timely reperfusion therapy, and the effectiveness of rehabilitation. Early and objective assessment of ischemic stroke severity is essential for predicting the subsequent clinical course and functional outcome. In this context, the National Institutes of Health Stroke Scale (NIHSS) is a widely used standardized clinical tool for quantitative assessment of neurological impairment. The NIHSS evaluates several neurological domains, including level of consciousness, language, visual function, facial movements, motor function of the upper and lower extremities, and sensory impairment. Assessment of functional recovery is an important component of the comprehensive evaluation of stroke outcomes. In particular, the Modified Rankin Scale (mRS) is widely used to assess the degree of disability and independence in daily activities. Determining the relationship between the initial NIHSS score and subsequent functional outcomes may contribute to more accurate clinical prognostication, individualized treatment strategies, and appropriate rehabilitation planning. Therefore, investigating the relationship between the initial NIHSS score and subsequent functional recovery in patients with ischemic stroke is of considerable clinical and prognostic importance. The findings of such research may help identify patients at higher risk of unfavorable functional outcomes at an early stage and provide a basis for developing individualized treatment and rehabilitation strategies.

In ischemic stroke, the clinical course and degree of functional recovery depend on several factors, including the extent and location of cerebral injury, collateral circulation, timely reperfusion therapy, and the patient's overall clinical condition. Therefore, early standardized assessment of neurological impairment is essential for predicting subsequent functional outcomes. The National Institutes of Health Stroke Scale (NIHSS) is one of the most widely used clinical scales for assessing the severity of ischemic stroke. It provides a systematic evaluation of several neurological domains, including level of consciousness, eye movements, visual fields, facial function, motor function of the upper and lower extremities, sensory function, coordination, and language. Higher NIHSS scores generally indicate a more severe neurological deficit. The initial NIHSS score is considered an important prognostic factor for subsequent functional recovery. Patients presenting with severe neurological deficits may require longer periods of rehabilitation and may have a higher risk of persistent limitations in mobility,

speech, and activities of daily living. However, the NIHSS score alone does not determine the final functional outcome. Other factors, including age, pre-stroke functional status, anatomical location of the infarction, presence of large-vessel occlusion, reperfusion therapy, comorbidities, and early rehabilitation, may also significantly influence recovery. Functional outcome assessment is commonly performed using the Modified Rankin Scale (mRS), which evaluates the degree of disability and independence in daily activities. The combined use of NIHSS and mRS allows a more comprehensive assessment of the relationship between initial neurological severity and subsequent functional outcomes. An important aspect of the assessment is the dynamic evaluation of NIHSS. Changes in NIHSS scores during the acute and early recovery phases may provide valuable information regarding the trajectory of neurological recovery. An early reduction in NIHSS score may reflect neurological improvement and may be associated with a more favorable functional outcome. Conversely, persistent or worsening neurological deficits may indicate an increased risk of unfavorable functional recovery.

Timely reperfusion therapy also plays a significant role in determining functional outcomes. Early identification of eligible patients for intravenous thrombolysis or mechanical thrombectomy can contribute to the preservation of viable brain tissue and reduction of subsequent disability. Therefore, NIHSS should be interpreted together with clinical, neuroimaging, and treatment-related parameters to achieve a more accurate individualized prognosis.

Overall, investigating the relationship between NIHSS scores and functional recovery in patients with ischemic stroke may facilitate early risk stratification, identification of patients at increased risk of unfavorable outcomes, and targeted allocation of rehabilitation resources. Such an approach may contribute to improved clinical decision-making, development of individualized rehabilitation strategies, and better long-term functional outcomes.

The NIHSS score is an important clinical tool for assessing the severity of neurological impairment and predicting functional recovery in patients with ischemic stroke. A higher initial NIHSS score is generally associated with more severe neurological deficits and less favorable functional outcomes. The combined use of NIHSS with functional assessment tools such as the Modified Rankin Scale (mRS) allows for a more comprehensive evaluation of the patient's recovery. However, factors such as age, infarct location, reperfusion therapy, pre-stroke functional status, comorbidities, and the effectiveness of rehabilitation should also be considered when predicting outcomes. Early prognostic assessment based on NIHSS may facilitate individualized treatment and rehabilitation strategies, help identify patients at higher risk of unfavorable functional outcomes, and contribute to improved long-term recovery.

References:

1. SHODMONOV X.Q., ESHMURODOV X.SH., TURSUNOVA O.T. Nervous and Mental Diseases. — Tashkent: Bilim, 2004. — 200 p.
2. MAJIDOV N. General Neurology. — Tashkent: "Tashkent" Publishing House, 1995. — 352 p.
3. BROTT T., ADAMS H.P. JR., OLINGER C.P., ET AL. Measurements of acute cerebral infarction: a clinical examination scale. Stroke. 1989;20(7):864–870. DOI: 10.1161/01.STR.20.7.864.
4. GOLDSTEIN L.B., BERTELS C., DAVIS J.N. Interrater reliability of the NIH Stroke Scale. Archives of Neurology. 1989;46(6):660–662. DOI: 10.1001/archneur.1989.00520420080026.

- 5.PRABHAKARAN S., GONZALEZ N.R., ZACHRISON K.S., ET AL. 2026 Guideline for the Early Management of Patients With Acute Ischemic Stroke: A Guideline From the American Heart Association/American Stroke Association. Stroke. 2026;57(8):e316–e436.
- 6.NATIONAL INSTITUTES OF HEALTH (NIH), NATIONAL LIBRARY OF MEDICINE. National Institutes of Health Stroke Scale (NIHSS). NIH Common Data Elements Repository.

