

MEASUREMENT OF SHORT-TERM FUNCTIONAL OUTCOME USING MODIFIED RANKIN SCALE IN PATIENTS WITH ACUTE ISCHAEMIC STROKE

Kovács B², Kajos L², Pónusz-Kovács D², Szapáry L³, Jozifek E³, Szántóri P², Boncz I^{1,2}

1. Institute for Health Insurance, Faculty of Health Sciences, University of Pécs, Pécs, Hungary
2. Doctoral School of Health Sciences, Faculty of Health Sciences, University of Pécs, Pécs, Hungary
3. Department of Neurology, Clinical Centre, University of Pécs, Pécs, Hungary

OBJECTIVES

The modified Rankin Scale (mRS) has been the gold standard for measuring stroke outcome in clinical trials for many years. This study aimed to assess the functional outcome of acute ischaemic stroke patients using the Modified Rankin Scale (mRS) 30 days post-stroke.

METHODS

The study was conducted at the Neurology Clinic of the University of Pécs Clinical Centre, where acute ischaemic stroke patients admitted between June 2022 and May 2023 were selected via convenience sampling. Patients were grouped into intravenous thrombolysis (IVT), mechanical thrombectomy (MT), and standard care (SC) based on treatments received. The 30-day follow-up assessed stroke severity using the NIH Stroke Scale (NIHSS) and functional outcome with the Modified Rankin Scale (Pre-mRS, follow-up mRS). Statistical analyses included descriptive statistics, paired T-tests, Wilcoxon tests, and McNemar tests (SPSS 25.0; p <0.05).

RESULTS

A total of 198 patients (115 men, 83 women) participated (MT: 50, IVT: 69, SC: 79) (Table 1). The epidemiological indicators are summarized in Table 2. Significant NIHSS score improvements were observed in all groups (IVT: 4.36 vs. 1.57, p<0.001; MT: 8.98 vs. 4.50, p<0.001; SC: 4.38 vs. 2.84, p<0.001) (Figure 1). Most patients in all groups were in the mild mRS category (0–2) at Pre-mRS (88%, 176 patients) and follow-up mRS (80%, 158 patients) (Table 3).

CONCLUSIONS

The slight deterioration in mRS values in the MT and SC groups can be attributed to several factors. Limitations in daily activities are not always evident during early rehabilitation after stroke, which may hinder recovery. In addition, when patients return home and receive less assistance, minor changes in functional abilities become more apparent, which may lead to changes in mRS categories. Age-related deterioration in health, progression of underlying diseases and psychosocial factors such as depression and fatigue may play a role in the deterioration. Further research is needed to better understand changes in mRS and to optimise stroke rehabilitation.

Financial support:

The research was carried out within the framework of the Translational Neuroscience National Laboratory (TINL) of the University of Pécs, with the support of the Stroke Pillar subproject of the project number RRF-2.3.1-21-2022-00011. Supported by the EKÖP-24-3-I-282 New National Excellence Program of the Ministry for Culture and Innovation from the source of the National Research, Development and Innovation Fund. And financed by the Thematic Excellence Program 2021 Health Sub-Programme of the Ministry for Innovation and Technology in Hungary within the framework of the TKP2021-EGA-10 project of the University of Pécs.

Corresponding author:

Kovács Bettina, MSc, PhD student
University of Pécs, Faculty of Health Sciences, Hungary
Doctoral School of Health Sciences
E-mail: kovacs.bettina@pte.hu



Table 1. The number, percentage, average age of the participants in the study

	THROMECTOMY			THROMBOLYSIS			STANDARD		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Number of patients (n)	23	27	50	44	25	69	48	31	79
Distribution of patients (%)	46	54	100	64	36	100	61	39	100
Average age (years)	68	70	69	63	67	64	66	70	67

		THROMECTOMY		THROMBOLYSIS		STANDARD		TOTAL	
		n	%	n	%	n	%	n	%
Type of residence	Village	12	24	20	29	32	40	64	32
	City	38	76	49	71	47	59	134	68
Level of education	Higher	3	6	12	17	13	16	28	14
	Upper Secondary	31	62	39	57	36	46	106	54
	Lower Secondary	16	32	18	26	30	37	64	31
Marital status	Single	3	6	7	0	3	1	13	1
	In a relationship	1	2	9	10	8	4	18	7
	Married	28	56	32	13	49	10	109	9
	Divorced	5	10	5	46	4	62	14	55
	Widowed	13	26	16	7	15	5	44	7
Type of occupation	Intellectual	1	2	6	23	4	19	11	22
	Light physical	8	16	14	9	14	5	36	6
	Heavy physical	4	8	5	20	1	18	10	18
	Retired	36	75	37	7	56	1	129	5
	Other	1	2	7	54	4	71	12	65

Table 2. Changes in Stroke-Related Epidemiological Indicators by Sex in Hungary, 1990–2021

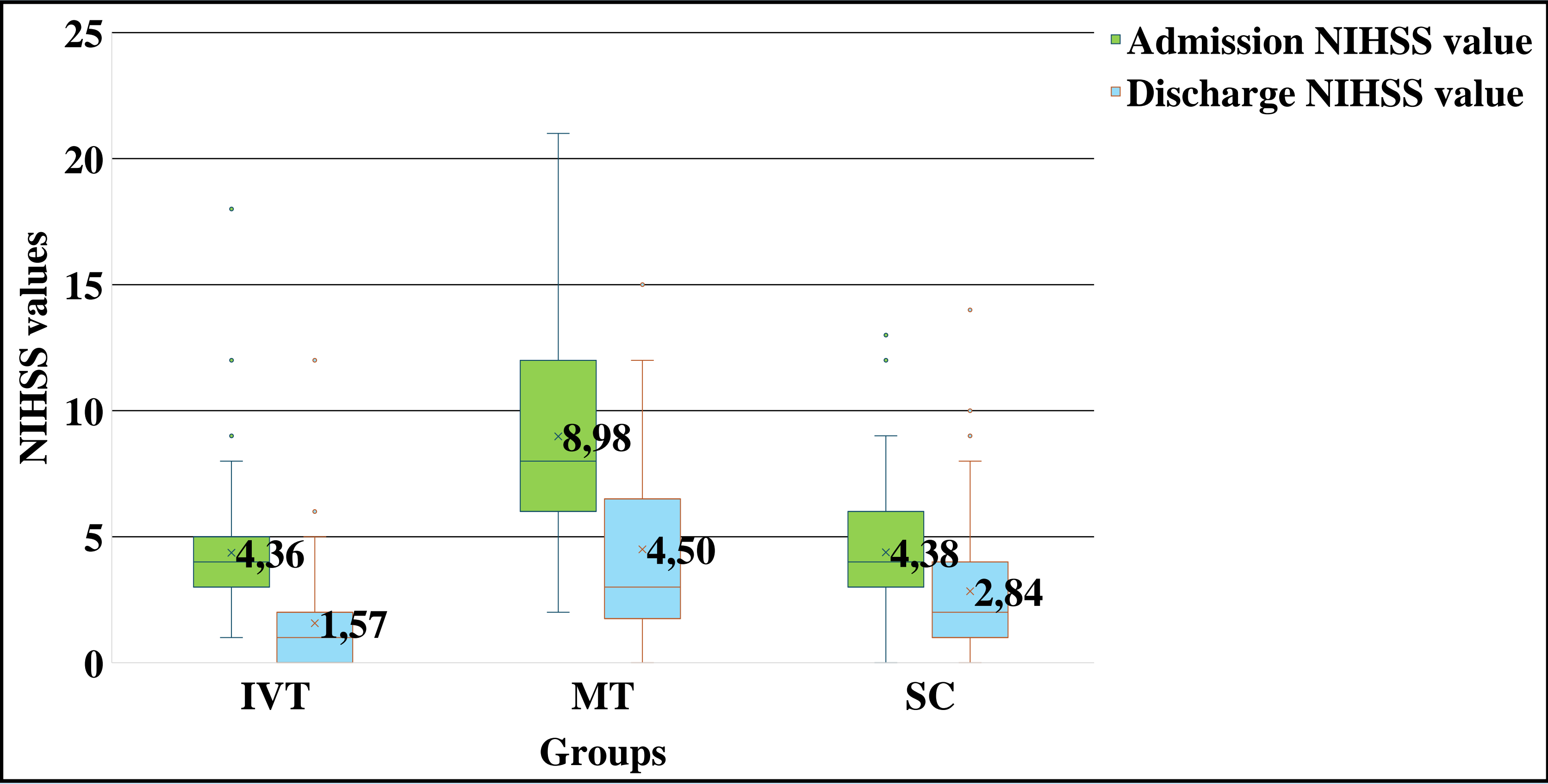


Figure 1. Boxplot of NIHSS values over the study period

	THROMECTOMY			THROMBOLYSIS			STANDARD			TOTAL
	n	%	p-value	n	%	p-value	n	%	p-value	
Pre-mRS (0-2)	40	80	0.016	64	93	0.125	72	91	0.031	176
Pre-mRS (>2)	10	20		5	7		7	9		22
Follow-up mRS (0-2)	33	66		59	86		66	84		158
Follow-up mRS (>2)	17	34		10	14		13	19		40

Table 3. Results of the Modified Rankin Scale