



INTER-RATER RELIABILITY BETWEEN PARAMEDICS AND NEUROLOGISTS IN ASSESSMENT OF HEMIPLEGIA IN ACUTE STROKE DID NOT IMPROVE AFTER RE-EDUCATION

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Background and Aims

Reliable pre-hospital triage by paramedics is needed to select possible candidates with acute stroke for mechanical thrombectomy and transfer them directly to the comprehensive cerebrovascular centre where then can receive such treatment.

Although optimal score has not been established, it is not clear what level of competency exists between paramedics for diagnosis of major neurological deficits.

The aim of our study was to define inter-rater reliability between paramedics and stroke neurologists for the presence of severe hemiparesis.

Method

It was a prospective, double phase, multicentre study.

During the first phase (April – October 2016), paramedics were educated to diagnose mild or severe hemiparesis via Internet e-learning. Their participation in the training was voluntary.

In the second phase (August-October 2017) paramedics were re-educated via webinars and examined straight after.

Agreement for degree of hemiparesis [NIHSS, item 4 and 5, scoring 0-2 (none or mild) versus 3-4 (severe)] between paramedics (assessed during pre-hospital) and neurologists (assessed immediately after stroke centre admission) was analysed using the unweighted Kappa index.

Stroke Card EMS angelz 1000 HOSPITALS - MAY 2019

Patient name: _____ Age: _____

Known time of symptom onset: _____

Time of symptom onset unknown

- If the time of symptom onset is unknown, when was the patient last seen healthy: _____
- If the symptoms started during the night, when did the patient go to sleep: _____
- When was the patient found: _____

Person to contact: _____

Current medical history:

Anticoagulation therapy in last 48 hours (warfarin, heparin, fraxiparin, NoAc – Xarelto, Eliquis, Pradaxa)

yes no N/A

Before the stroke was the patient self-sufficient (able to walk)

yes no N/A

FAST test (Face Arm Speech Test)

Speech difficulties: yes no

Facial droop: yes no

Arm weakness: yes no

Sudden appearance: yes no

FAST PLUS test (The severity of the neurological disorder in the limbs)

1. **Paretic Arm** – the limb after being extended up to 45° drops down immediately without resistance. Each limb is tested in turn.

Left Arm yes no

Right Arm yes no

2. **Paretic leg** – the limb after being extended up to 30° drops down immediately without resistance. Each limb is tested in turn.

Left leg yes no

Right leg yes no

2 x YES = HIGH PROBABILITY OF LARGE VESSEL OCCLUSION INDICATED TO ENDOVASCULAR TREATMENT

TRIAGE:
For all patients with positive FAST test up to 6 hours from the stroke symptom onset, and in parallel with severe hemiparesis (2 x yes for limb weakness) immediately call the Comprehensive Cerebrovascular Centre. For the patients with suspected stroke call the closest stroke centre in the catchment area.

Name of physician: _____
Date, time and name of EMS staff member: _____

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Results

During the first phase consecutive 422 (47% of all) patients and during the second one 71 (65%) patients were evaluated for the presence of hemiparesis by both paramedics (filling in the “stroke card”) and neurologists. In first phase there were 215 men (51%), average age 73, in second phase 35 men (50%), average age 74.

In both phases the agreement between the paramedics and neurologists was moderate – in the first one kappa 0.54 (95%CI 0.46-0.62) in the second kappa 0.43 (95% CI 0.27-0.63).

	First phase	Second phase
Gender	215M (51%) vs 207 F (49%)	35 M (50%) vs 36 F (50%)
Total number of patients	898 (100%)	110 (100%)
Evaluated patients	422 (47 %)	71 (65%)
Total agreement	76%	72%
Kappa index (unweighted)	0.54 (95% CI 0.46-0.62)	0.43 (95% CI 0.27-0.63)

2 ND PHASE	NEUROLOGIST	
	negative	mono/hemiplegia
PARAMEDICS		
negative	19 (27%)	4 (6%)
mono/hemiplegia	16 (23%)	32 (45%)

Conclusion

In our study, reliability of assessment of hemiplegia by paramedics was only moderate and was not improved by repeated training. More effective training of paramedics is needed especially with the prospect of clinical need for pre-hospital triage for mechanical thrombectomy. However, the co-operation with paramedics has improved - more “stroke cards” have been filled in and therefore more patients could have been evaluated.