STROKE CARE MEDICAL DISPATCH ASSESMENT – ARE CURRENT TRIAGE TOOLS SAFE FOR YOUNG ADULTS?

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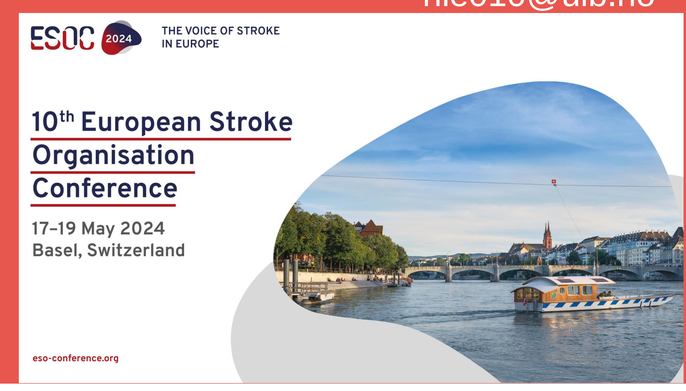

Background and aims:The incidence of stroke is increasing among young adults. Unawareness and misinterpretation of symptoms among the public and health care providers lead to treatment delays. We aimed to investigate prehospital stroke identification rates, symptom presentation and time delays in young adults with acute ischaemic stroke (AIS).

Methods: We collected data from the Norwegian Stroke Registry on AIS patients who had contact with the Emergency Medical Service, were evaluated by the Emergency Medical Dispatch Centre (EMDC), and had an ambulance dispatched to them in the year 2021.The EMDC utilized the Norwegian Medical Priority Dispatch System (MPDS) scale to assign an emergency (acute/urgent/routine) level of dispatch. Patients were categorized into two groups: patients under (young adults) and over 60 years of age. In case of stroke suspicion, the dispatcher communicated their suspicion of diagnosis to the ambulance personnel. Data on reperfusion treatment, symptom assessments, time metrics and correct EMDC suspicion of stroke at ambulance dispatch were collected.

Results: A total of 91/771 (12 %) of the included patients were young adults. Young adults tended to have higher rates of correctly identified EMDC stroke suspicion (62 (68 %) vs 419 (62 %) (OR 1.33 (95% CI 0.83,2.12; p=0.23). They also had lower NIHSS scores (2 vs 4; p=0.038) and presented more often with symptoms such as dizziness, ataxia, diplopia, and unconsciousness (33 (37 %) vs 155 (23); (OR 1.94 (95% CI 1.22,3.08; p=0.005). The ambulance on-scene times ((11 vs 13 minutes); p=0.019)) were also shorter for these patients. Differences in the door-to-needle (22 vs 23 minutes; p=0.24) and door-to-groin times (84 vs 68 minutes; p=0.38) were statistical non-significant in both groups.

Conclusions: In this study, EMS showed comparable stroke identification and response times in young adults versus those over 60 with AIS. Young adults presented more frequently with non-focal stroke symptoms and lower NIHSS scores on admission.

Further research is necessary to evaluate stroke symptom characteristics and EMS triage in young adults.

Table 1: Patient characteristics

	Age under 60 years (young adults) N=91	Age over 60 years N=680	P-value
Female sex, n	31 (34 %)	304 (44 %)	P=0.20
Median NIHSS arrival (IQR)	2 (1-7)	4 (2-8)	P=0.038
Former Stroke, n	11 (12 %)	162 (24 %)	P=0.076
Pre stroke mRS 0-2, n	77 (85 %)	553 (81 %)	P<0.0010
Former myocardial infarction, n	1 (1%)	87 (13 %)	P=0.38
Atrial fibrilliation, n	8 (9 %)	212 (31 %)	P<0.001
Previous Smoker, n	20 (22 %)	123 (18 %)	P=0.076
Diabetes, n	13 (14 %)	125 (18 %)	P=0.34
Former Transient ischaemic attack, n	4 (4 %)	49 (7 %)	P=0.76

IQR=Interquartile range

NIHSS=National Institute of Health Stroke Scale

Pre mRS 0-2=modified Rankin Scale indicating functional independence prior to the stroke event

Table 2: Time metrics, reperfusion treatments and outcomes

	Age under 60 (N=91)	Age over 60 (N=680)	P-value
Median Response time, minutes (IQR)	11 (9-19)	12 (8-19)	P=0.86
Median alert time, minutes (IQR)	2 (1-4)	2 (2-4)	P=0.067
Median time from EMDC call to hospital admission, minutes (IQR)	42 (28-60)	42 (30-66)	P=0.47
Median ambulance on-scene-time, minutes (IQR)	11 (5-18)	13 (8-20)	P=0.019
DTN, minutes (IQR)	22 (13-36)	23 (16-40)	P=0.24
DTG, minutes (IQR) PSC and CSC	84 (55-316)	68 (57-95)	P=0.38
Stroke suspicion EMCC prenotification to ambulance	62 (68 %)	419 (62 %)	P=0.23
Time from symptom start to hospital admission, hours (IQR)	1.4 (0.8-3.8)	3.2 (1.2-11)	P<0.001
Patients with Prehospital FAST symptoms on-scene, n	67 (74 %)	504 (74 %)	P=0.95
Patients presenting with atypical stroke symptoms, n	33 (36 %) Dizziness: 22 (24 %) Ataxia: 3 (3 %) Combined Ataxia and dizziness 1 (1 %) Combined ataxia and unconscious: 1 (1 %) Combined diplopia and dizziness: 0 (0 %) Diplopia 2 (2 %) Combined dizziness and unconscious 0 Unconscious: 4 (4 %)	155 (23 %) Dizziness: 63 (9 %) Ataxia: 8 (1 %) Combined Ataxia and dizziness 6 (1 %) unconscious: 1 (1 %) Combined diplopia and dizziness: 2(0.3 %) Diplopia 10 (2 %) Combined dizziness and unconscious 0 Unconscious 28 (4 %)	P=0.005
IVT rate, n	50 (55 %)	215 (32 %)	P<0.001
mRS 0-2, n	45 (62 %)	355 (63 %)	P=0.30

Response time=time from start of the Emergency Medical Dispatch Centre (EMDC) call to ambulance on-scene arrival

IQR=Interquartile range

Alert time= Time from start EMDC call to ambulance dispatch

EMS total prehospital time=time from start EMDC call to hospital admission

EMS on-scene time= time from start EMDC call to hospital arrival

DTN=Door-to-needle time intravenous thrombolysis

DTG=Door-to-groin time Endovascular therapy

IVT=Intravenous thrombolysis

mRS 0-2=modified Rankin Score<=2, indicating achievement of functional independence three months after the stroke. 73/91 (80 %) of patients under 60 years and 562 (82 %) of patients over 60 years had follow up mRS three months after the stroke event.

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