MANAGEMENT OF PATIENTS WITH MINOR CLINICAL DEFICITS DESPITE A LARGE CEREBRAL VESSEL OCCLUSION

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Introduction

Recently, a series of randomized controlled trials could demonstrate that endovascular mechanical thrombectomy (MT) plus standard of care is superior to medical management alone in stroke patients with acute large vessel occlusion (LVO, 1). Up to 30% of patients with LVO present with only minor clinical deficits (NIHSS < 5) on admission (2). However, subjects with minor symptoms in spite of LVO had either been excluded from the large prospective trials on MT (3-6) or their number was markedly underrepresented (7,8). Still, observational studies suggest a high risk of unfavorable outcome in those patients (9-11). The optimal management of those ischemic stroke patients is currently unknown (9, 12-14). While pathophysiologic considerations suggest a benefit of an early reperfusion therapy, evidence from controlled clinical trials is lacking and rescue intervention in case of secondary deterioration may be common. Objective: To evaluate the association of immediate vs. delayed mechanical thrombectomy (MT) in ischemic stroke patients with large vessel occlusion (LVO) and minor clinical deficits on admission with outcome.

Methods

- All patients admitted 2013 - 2016 to the University Medical Center Erlangen (incl. drip and ship).
- Mechanical thrombectomy due to a large vessel occlusion (ICA, M1 and M2 (MCA), BA, VA).
- Retrospective identification
- Prospectively organized institutional database.

Patients: NIHSS ≤4 ← vs.→ NIHSS >4 on admission

Intervention:

- Immediate mechanical thrombectomy (IT)
- Initial medical management with rescue-intervention (MM) in case of secondary deterioration

Outcome:

- In-hospital mortality
- Modified Rankin Scale on day 90: 0-2 = favorable; 3-6 = poor

Results

223 patients (184 (83%) with anterior circulation stroke) were included.
Median age: 75 (interquartile range (IQR) 60-80) years. 120 (54%) female patients.
13 (6%) patients presented with NIHSS<5 on admission.

Characteristics (n=223)	NIHSS ≤4 (n=13)	NIHSS >4 (n=210)	p-value
Age [years] (IQR)	65 (58-75)	75 (62-81)	0.056
Sex [female] (%)	2 (16)	118 (56)	0.004
Baseline mRS (IQR)	1 (0-2.5)	0 (0-2)	0.549
Symptom to groin time [hours] (IQR)	5.3 (3.6-12.6)	3.9 (2.4-6.4)	0.169
Intravenous thrombolysis (%)	7 (54)	164 (78)	0.082
Intra-hospital mortality (%)	5 (39)	41 (20)	0.149
mRS on day 90 (IQR; n= 191)	4.5 (2.5-6)	4 (2-6)	0.326
Favorable Outcome (mRS 0-2) (%) ; n=191)	3 (25)	51 (29)	0.999
Symptomatic ICH (%)	1 (8)	6 (3)	0.347
Procedure related complications (%)	0 (0)	21 (10)	0.377
Infarct size >1/3 of corresponding artery territory(%)	4 (31)	53 (25)	0.744

Characteristics (n=13)	IT group, n=8	MM group, n=5	p-value
Intra-hospital mortality (%)*	1 (13)	4 (80)	0.032
mRS on day 90 (IQR; n= 12)+	4 (2-5)	6 (4-6)	0.148
Favorable Outcome (mRS 0-2) (%) ; n=12)*	2 (29, n=7)	1 (20)	0.999

Figure 1: Association of NIHSS on admission with functional outcome on day 90 assessed using the modified Rankin Scale (mRS). Only patients with baseline mRS 0-2 (during the week before admission) were included in this figure. A: Including anterior and posterior circulation strokes (n=157). B: Including only anterior circulation strokes (n=128; cohort of sensitivity analysis). Median mRS (black line) as well as 25th and 75th quartile (dotted grey lines) are displayed.

Figure 1:

Conclusion

Patients with mild neurologic deficits on admission despite a large vessel occlusion have a high risk of unfavorable outcome.
Initial MM with rescue intervention after clinical deterioration was associated with a fatal clinical course.

Limitations

- Single center, retrospective design
- Small cohort of treated patients with NIHSS <5
- No control group, anterior and posterior circulation strokes

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