STROKE

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Dear Doctor,

Greetings from Micro Labs. We are happy to bring you "Stroke Newsletter" which contains latest and interesting news in the field of Neuropsychiatry.

This issue contains:

1. A Longitudinal Study in the MR CLEAN Registry Shows Improvements in Endovascular Treatment for Acute Ischemic Stroke
2. Ten-Year Follow-Up on Depression in Stroke Survivors. The SMART-Medea Study looked at the factors that influence the natural course of depressive symptoms in stroke survivors.
3. An updated systematic assessment of pressor treatment in acute ischemic stroke
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A Longitudinal Study in the MR CLEAN Registry Shows Improvements in Endovascular Treatment for Acute Ischemic Stroke

Endovascular thrombectomy (EVT) with or without intravenous alteplase is an effective treatment for acute ischemic stroke producing major artery occlusion (LAO) in clinical trials. In 2016, an individual patient meta-analysis of the Highly Effective Reperfusion Evaluated in Multiple Endovascular Stroke studies (HERMES) indicated that for every three patients treated with EVT, one would have reduced disability by at least one level on the modified Rankin Scale (mRS).[1]The MR CLEAN Registry in the Netherlands comprised all patients with ischemic stroke treated with EVT from the final patient in the MR CLEAN study. Comparing the results of the second MR CLEAN Registry cohort to the first, which were previously published, in order to assess trends in patient characteristics, workflow times, and interventional results over the last 3.5 years, as well as their relationship to clinical outcomes.[2]

The MR CLEAN Registry (March 2014 to June 2016; June 2016 to November 2017) is a prospective, countrywide observational cohort research involving all patients treated with EVT for acute ischemic stroke in all Dutch interventional stroke clinics. The MR CLEAN Registry comprised patients who had an arterial puncture with the goal of doing EVT for acute ischemic stroke. EVT included arterial puncture, catheterization, and thrombus removal with or without intraarterial thrombolytics using stent-retriever thrombectomy, aspiration, or both. The choice of interventional device was left up to the treating interventionist.

At 90 days, the key outcome measure was functional outcome, which was measured using the modified Rankin Scale (mRS). The National Institutes of Health Stroke Scale (NIHSS) was used to assess neurological deficit 24 to 48 hours following the beginning of the stroke, as well as symptomatic intracranial haemorrhage. If a patient died or showed clinical worsening of 4 points on the NIHSS, and the deterioration was evaluated connected to the cerebral haemorrhage on follow-up imaging by the major adverse events committee, the intracranial haemorrhage was termed

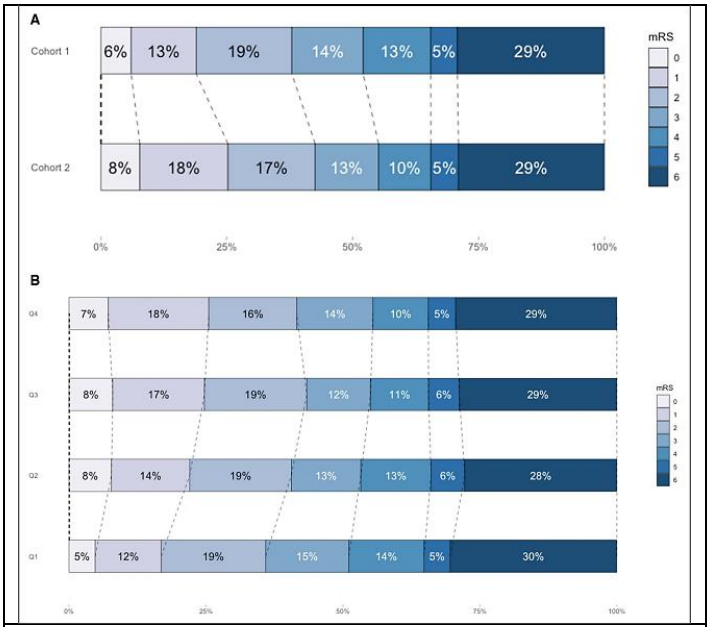

Fig.1: Modified Rankin Scale (mRS) scores at 90 d.

symptomatic. To investigate variations in the primary outcome, multivariable ordinal logistic regression was utilised (ordinal modified Rankin Scale at 90 days) (Fig.1)

This study looked at 1488 of the 1627 patients in the initial cohort. Except for older age, poorer collaterals, and less evidence of early ischemia on computed tomography in the second cohort (n=1692, first cohort n=1488), baseline characteristics were similar between cohorts (second cohort n=1692, first cohort n=1488). The second cohort had a shorter time from stroke onset to groyne puncture and reperfusion (median 185 against 210 minutes; P <0.001 and 236 compared 270 minutes; P< 0.001, respectively). The second group had a higher rate of successful reperfusion than the first (72 percent versus 66 percent; P0.001). The functional outcome improved significantly (adjusted common odds ratio 1.23 [95 percent confidence interval: 1.07–1.40]). Patients were functionally independent at 90 days in the second cohort (42.6% versus 37.9%; P=0.01) (Table 1). Adjusting for time from onset to reperfusion (adjusted common odds ratio, 1.12 [95 percent confidence interval, 0.98–1.28]) and successful reperfusion (adjusted common odds ratio, 1.13 [95 percent confidence interval, 0.99–1.30]) reduced the effect. In the analysis, the outcomes per chronological quartile were consistent.

	First cohort (n=1 488)	Second cohort (n=1692)	P value	Missing (%)
Clinical				
mRS score at 90 d (median [IQR])	3 (2-6)	3 (1-6)	0.02	6.7
mRS <2 at 90 d (%)	517 (37.9)	683 (42.6)	0.01	6.7
NIHSS follow-up (24-48 h) (median [IQR])	11 (4-18)	9 (4-16)	<0.01	10.3
Safety				
Mortality at 90 d, %	398 (29.2)	465 (29.0)	0.92	0.0
Symptomatic intracerebral hemorrhage, %	86 (5.8)	102 (6.0)	0.83	0.0
Symptomatic progression of stroke, %	141 (9.5)	147 (8.7)	0.48	0.0
First cohort: March 2014 to June 2016; second cohort June Rankin Scale: and NIHSS National Institutes of Health	2016 to November Stroke Scale.	2017.10 indicates	interquartile range;	mRS, modified

Table 1: Clinical and Safety Outcomes of first and second cohort

In the second sample, the endovascular technique was more often successful, even when only evaluating patients with complete digital subtraction angiography (DSA) imaging. Because the influence of cohort number on patients' functional result was diminished after accounting for workflow durations and reperfusion success, the observed improvement in outcomes is most

likely due to these in-hospital workflow and interventional improvements[2]. EVT for select patients with cerebral ischemia associated with CAD was shown to be a safe and effective therapy technique for restoring luminal patency, with favourable clinical results, by Kim JG et al. To optimise EVT for CAD patients, large-scale randomised research are needed.[3] The first and second cohorts of the MR CLEAN Registry show that efforts in the Netherlands to optimise process time and procedures pay off in the real world. More research is needed to determine which workflow or interventional changes may result in even better results.

In recent years, clinical outcomes following endovascular therapy for acute ischemic stroke in ordinary clinical practise have improved, owing to faster workflow times and increased effective reperfusion rates.

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Ten-Year Follow-Up on Depression in Stroke Survivors. The SMART-Medea Study looked at the factors that influence the natural course of depressive symptoms in stroke survivors.

The most common psychiatric condition among stroke survivors is post-stroke depression (PSD), with prevalence changing between groups, examinations, stages following stroke, and inclusion criteria. Its prevalence was reported as 31 percent in a 2014 meta-analysis and 33.5 percent in a 2017 one, with 17.7% in major depression, 13.1 percent in moderate depression, and 3.1 percent in dysthymia. Meanwhile, depression has been linked to a number of unfavourable outcomes in stroke patients.[1] There is a link between depression and physical function following a stroke. On the one hand, a greater degree of physical handicap raises the likelihood of post-stroke depression. Depression, on the other hand, has a detrimental impact on functional results because depressed patients are less likely to participate in the rehabilitation process, resulting in a suboptimal recovery.[2] However, there is a scarcity of information about the long-term history of depressive symptoms in stroke survivors, particularly after the first five years. As a result, the goal of this study was to describe the natural course of depressed symptoms in stroke survivors over time and to determine which prognostic variables are linked to different types of depression symptoms after stroke.[3]

The researchers used data from the Second Manifestations of ARTerial Disease-Memory, depression, and Aging (SMART-Medea) trial, an observational prospective cohort study in patients with a history of vascular illnesses, to conduct a secondary data analysis. The researchers chose all patients (n=192) with a diagnosis of cerebrovascular disorders from this cohort for the study. The normal course of depressed symptoms is the major result. The Patient Health Questionnaire-9 was used to assess depressive symptoms (PHQ-9). During the course of the trial, participants were required to complete the PHQ-9 questionnaires twice a year. The existence of depressive symptoms was indicated by a score of ten. The researchers conducted a multinomial logistic regression analysis to find predictive variables for the progression of depression symptoms following a stroke.

Because of three PHQ-9 follow-up measures, 20 (10.4 percent) of the 192 participants were excluded. When the individuals' depression symptoms were calculated throughout the years following their stroke, it was shown that 107 (62.2%) of them had never been depressed. A single episode of depressive symptoms was seen in 33 (19.2%) of the subjects. An intermittent course of depressed symptoms was detected in 24 (14%) patients, while a chronic course of depressive symptoms was recognised in 8 (4.7%). A small number of subjects (n=8) were found to have a long-term history of depressive symptoms. This group was merged with 'intermittent course' (n=24) and renamed'recurrent depressive symptoms' (n=32) in order to undertake suitable statistical analysis. The ORs per variable were calculated using a univariate multinomial logistic regression analysis (MLR) (Table 2). The MLR analysis revealed few variations in variables between the several stages of depression symptoms following a stroke.

The GARS-4 physical function score was a significant predictor of recurring depression symptoms (OR=1.06 [1.01-1.12]) and a single episode (OR=1.06 [1.01-1.11]) (Figure 2). When compared to no depression, a lower degree of physical functioning was related with a single and recurrent course of depressive symptoms.

	Never is the reference category			
	Single episode		Recurrent episodes	
	OR	95% CI	OR	95% CI
Age (years)	1.00	(0.96-1.04)	0.98	(0.94-1.02)
Sex	1.02	(0.39-2.64)	0.52	(0.22-1.24)
Social				
Level of education				
Middle vs Low	0.54	(0.24-1.19)	0.57	(0.26-1.29)
High vs Low	2.64	(1.09-6.38)	2.53	(1.05-6.15)
Marital status	1.67	(0.53-5.28)	0.69	(0.27-1.76)
Employment	0.50	(0.18-1.43)	0.65	(0.24-1.75)
Mental				
Recent life-events	0.66	(0.29-1.48)	0.58	(0.25-1.36)
History of depressive symptoms	0.58	(0.26-1.25)	0.49	(0.22-1.11)
MMSE	1.14	(0.86-1.52)	0.90	(0.73-1.11)
GARS-4°	1.06	(1.01-1.11)	1.06	(1.01-1.12)
Comorbidities				
Alcohol use	0.74	(0.29-1.90)	2.34	(1.04-5.29)
Smoking (pack years)	1.00	(0.98-1.02)	1.00	(0.98-1.02)
Diabetes Mellitus type 2	0.63	(0.25-1.62)	0.52	(0.21-1.30)
BMId mean	1.07	(0.98-1.18)	1.00	(0.90-1.12)
Vascular				
Hyperlipidaemia	0.99	(0.38-2.58)	1.03	(0.40-2.68)
Hypertension	0.93	(0.37-2.31)	1.09	(0.45-2.64)
Vascular comorbidities	0.92	(0.41-2.05)	1.14	(0.50-2.61)

Table 2: Univariate multinomial logistic regression analysis on courses of depressive symptoms after stroke.

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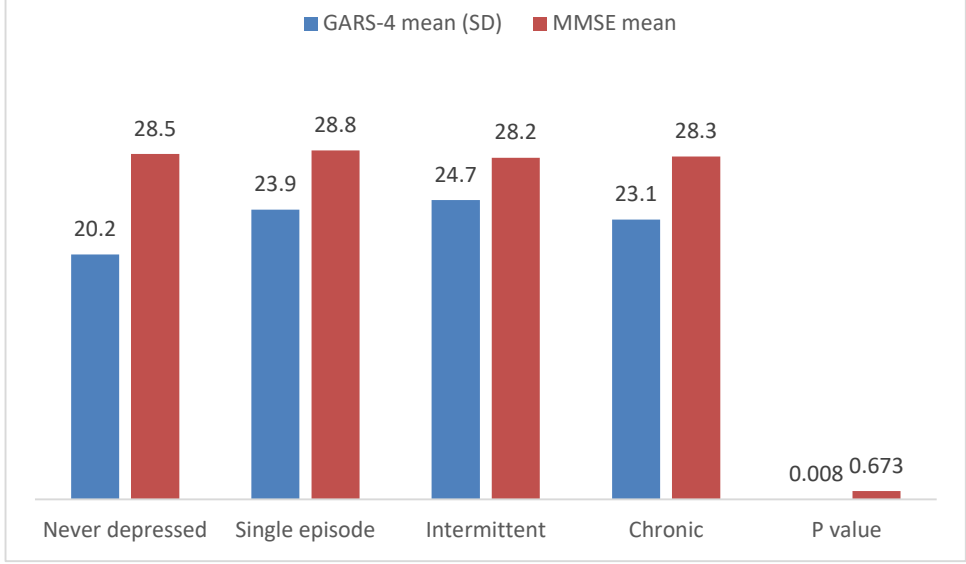

Figure 2: Baseline characteristics on courses of depressive symptoms after stroke

The findings of this study support the notion that depressive symptoms are a severe problem following a stroke. The cumulative incidence of 40% (follow-up 10 years) is comparable to the cumulative incidence of 31% (follow-up 5 years) and 55% (follow-up 15 years) reported previously, implying that the cumulative incidence increases over time. Physical function was linked to single and recurrent episodes of depression symptoms following a stroke in this study. Physical function, alcohol consumption, and a high level of education were all identified as possible factors in subgroup analysis. Following that, the MLR only demonstrated that physical function was important. This finding is consistent with the previous meta-analysis and review, which identified physical disability and functional reliance as drivers of depression following stroke[3]. PSD is highly widespread following stroke, according to Espuela FL et al, and is linked to the severity of the stroke, its placement on the left side, and the degree of disability at discharge. Its significance merits the evaluation and early treatment that are nevertheless difficult to come by today.[4]

On a long-term basis, about 40% of the individuals have depressed symptoms. Physical function is important in the development of these symptoms in stroke survivors.

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An updated systematic assessment of pressor treatment in acute ischemic stroke

In acute ischemic stroke (AIS), both low and high blood pressure (BP) are linked to a poor functional prognosis. A BP threshold of 185/110 mmHg is recommended for intravenous thrombolysis (IVT) subjects by the American Heart Association/American Stroke Association (AHA/ASA) acute ischemic stroke guidelines. According to one study, hypotension after a stroke is linked to decreased cerebral blood flow, which leads to infarct extension and neurological impairment. Increasing blood pressure in AIS patients with low blood pressure, proven major vascular occlusion (LVO), and recoverable penumbra may thereby enhance brain perfusion and functional outcomes.[2] Clinical recommendations on poststroke hypotension therapy lack objective definition, indicating a lack of data in this area. Patients with low blood pressure, on the other hand, may require inotropic assistance as well as close cardiac and neurological monitoring, according to guidelines.[3] This shows that the causes of low blood pressure in stroke patients should be investigated, and vasopressor medication should be considered in some cases. However, when to raise or maintain blood pressure, how long to do so, the best medication to use, and which individuals might benefit are all unknown.

The current evidence on the use of vasopressors in patients with AIS is examined in this updated systematic review.

The researchers conducted a systematic search of numerous databases from August 2019 to December 2020 to find studies that looked at the effects of raising blood pressure in AIS. Any study that attempted to or reported on the effect of raising BP in AIS was included in this study. Adults (aged 18 years or older) of either sex who were eligible or not for acute reperfusion therapy (ART) such as IVT, mechanical thrombectomy (MT), intra-arterial thrombolysis (IAT), or a combination of these therapies were included in the study. The seven-level modified Rankin Scale was used to measure death or reliance as the primary outcome (mRS). Secondary outcomes included stroke severity (NIHSS, National Institute of Health Stroke Scale), mortality, and adverse events, as well as any other clinical metrics used to determine neurological disability.

There were 27 trials in total, including 1886 patients. Increasing blood pressure during acute reperfusion therapy was studied in nine trials (intravenous thrombolysis, mechanical thrombectomy, intra-arterial thrombolysis or combined). Only BP elevation was tested in eighteen investigations. Norepinephrine (n = 6), epinephrine (n = 3), and dopamine (n = 2) were the most regularly utilised agents to raise blood pressure (n = 16 trials). A meta-analysis was not possible due to the small number of patients and study heterogeneity. Overall, individuals with fluctuating or increasing neurological symptoms, major artery blockage with labile BP, prolonged post-stroke hypotension, and ineligible for intravenous thrombolysis or rapid reperfusion therapy were able to have their blood pressure raised. The consequences on functional outcomes were mainly unknown, thus if such an intervention is implemented, it is recommended that it be closely monitored.

Study	**Baseline BP (mmHg)**	**Target BP (mm Hg or % as reported)**	**BP during end of treatment (mm Hg)**	**Change in BP (mm Hg or % as reported)**	**Attained target**
Olivia-Filho 2002	SBP 120	160 SBP			
Schwarz 2002	Mean MAP SD : 83.6 + 1.6	> 10 MAP	Mean MAP + SD : 108.9 ± 2.0	MAP increases 25.3	
Hillis 2001		Increments of 10% MAPS	-		
Hillis 2001	MAP : 72-88	130 MAP 90-100			100%
Rordorf 2001	Mean SBP SD, Responders: 140 ± 13	13 SBP 160 or >20% from baseline	Mean SBP SD Responders : 174 ± 15		100%
Saxena 1999	Mean MAP SDA/C 113 ± 14		Mean MAP ± SDA/C : 134 ± 20/109± 16		
Duke 1998	SBP 110-120		SBP 110-120		
Rordorf 1997	Mean SBP 152"		Mean SBP 156		
Meier 1991		210-220			
Wise 1972		SBP : 150-170 100 DBP: 85 - 100			38%

Table 3: Haemodynamic characteristics of included studies

In patients with acute lacunar ischemic stroke, rising blood pressure was found to be linked with early neurological improvement and functional independence on day 90 (mRS 0–2).[4] Increasing blood pressure directly increases blood volume to a brain end-artery and enhances microcirculation, which could explain the observed benefits. It was unclear whether fatality rates were related to therapy in this study, and adverse events were not consistently documented. The target BP for vasopressor therapy varied between research; older studies had an SBP target of 150–175 mm Hg, while one trial used variable BP thresholds. In this study, patients with an SBP aim of 180–200 mm Hg had a greater rate of symptomatic intracerebral haemorrhage (sICH). This could be significant because the relationship between blood pressure

and outcomes following MT shows a J-shaped or U-shaped curve, implying a tight therapeutic target and response window.[2]

Although theoretical grounds support raising blood pressure to enhance cerebral blood flow and maintain the ischemic penumbra in some AIS patients, the evidence is sparse, and the findings are largely inconclusive. To determine the best BP target, agent, treatment duration, and clinical outcomes, large, randomised controlled trials are required.

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A case report and review of the literature on reversible anomia with cerebral venous thrombosis

Cerebral venous thrombosis (CVT) is a relatively rare cause of cerebral infarction. All veins in the body, including the cerebral veins, can be affected by venous thrombosis. If left untreated, CVT is a causative mechanism of stroke, especially in the young, and is associated with a high fatality rate.[1] Anomia is described as "A linguistic disorder characterised by the inability to name correctly observed individuals and objects," according to the MeSH. The individual can describe the object in issue but cannot give its name. This disorder is linked to lesions in the dominant hemisphere..." [2] The current case describes a patient who had reversible anomia as a result of cerebral venous thrombosis, emphasising the need of early detection and treatment of CVT for a favourable outcome.[3]

A 32-year-old female patient reported with a generalised headache and a two-week-old beginning of word-finding problems. Over-the-counter drugs had no effect on the headache. She complained of nausea and blurred vision. She had given birth to a dead foetus two months before. The patient was fully aware and oriented on neurological examination, with a Glasgow coma score of 15/15, and cranial nerves, motor, and sensory exams were unremarkable. A bilateral fundus examination revealed grade 2 papilledema. The fluency, compression, name, reading, and repetition scores on the language assessment were all typical. A 60-second word-generating test was used to examine naming, which revealed anomia. Magnetic resonance venography revealed thrombosis of the left transverse, sigmoid sinus, and associated cerebral veins, while brain magnetic resonance imaging revealed left temporoparietal ischemia (Figure 3). She was put on warfarin 5 mg once a day for 6 months and her symptoms, including the anomia, significantly improved.

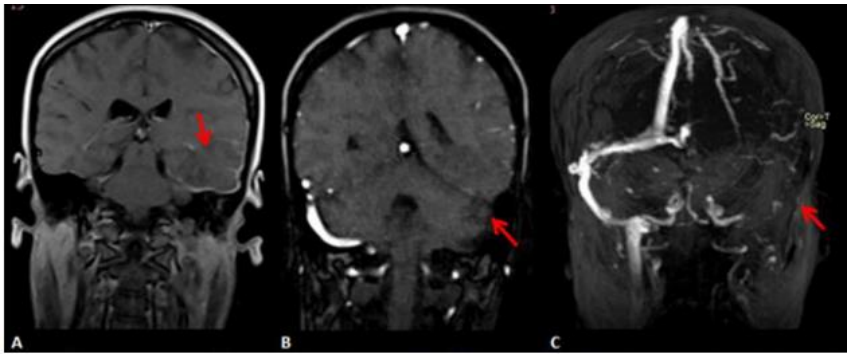

Figure 3: A- hypointense lesion in the left inferior parietal region (red arrow). Coronal (B) and 3-D (C) magnetic resonance venography showing flling defect of the left transverse and sigmoid sinuses along with corresponding cortical venues (red arrow)

Female patients are more likely to develop a cerebral venous thrombosis, which typically affects young women between the ages of 30 and 40. This is in line with the demographics of the current situation. The patient's thorough thrombophilic workup was not completed due to financial constraints in this case. Increased intracranial pressure (ICP) is caused by restriction of cerebrospinal fluid (CSF) absorption, as evidenced by the presence of headache, nausea,

vomiting, and bilateral papilledema in this case, which is consistent with previous investigations. When the parietotemporal region of the dominant hemisphere is infected as a result of thrombosis of the transverse, superior, and sigmoid sinuses, individuals with CVT may present with word finding difficulty.[4,2]

In conclusion, the current case presents a young female patient who developed reversible anomia as a result of cerebral venous thrombosis. The instance also emphasises the need of early detection and treatment of CVT for a favourable outcome

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