

THROMBECTOMIE MECANIQUE INTRACRANIENNE:

ANESTHESIE, SEDATION, ANALGESIE

GESTION DES TRAITEMENTS ADJUVANTS

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Du 5 au 7
février 2020

Liens d'intérêt:

PHRC-I DGOS 2016: financement étude AMETIS: Sédation versus Anesthésie Générale dans la prise en charge des AVCi de la circulation antérieure (Anesthesia Management in Endovascular Therapy for Ischemic Stroke)

AHA/ASA Guideline

2015 AHA/ASA Focused Update of the 2013 Guidelines for the Early Management of Patients With Acute Ischemic Stroke Regarding Endovascular Treatment

16. It might be reasonable to favor conscious sedation over general anesthesia during endovascular therapy for acute ischemic stroke. However, the ultimate selection of anesthetic technique during endovascular therapy for acute ischemic stroke should be individualized based on patient risk factors, tolerance of the procedure, and other clinical characteristics. Randomized trial data are needed (*Class IIb; Level of Evidence C*). (New recommendation)

Conscious Sedation Versus General Anesthesia During Endovascular Therapy for Acute Anterior Circulation Stroke

Preliminary Results From a Retrospective, Multicenter Study

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Comparison of Safety and Clinical and Radiographic Outcomes in Endovascular Acute Stroke Therapy for Proximal Middle Cerebral Artery Occlusion With Intubation and General Anesthesia Versus the Nonintubated State

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Background and Purpose—Patients undergoing intra-arterial therapy (IAT) for acute ischemic stroke receive either general anesthesia (GA) or conscious sedation. GA may delay time to treatment, whereas conscious sedation may result in patient movement and compromise the safety of the procedure. We sought to determine whether there were differences in safety and outcomes in GA patients before initiation of IAT.

Methods—A cohort of 980 patients at 12 stroke centers underwent IAT for acute stroke between 2005 and 2009. Only patients with anterior circulation strokes due to large-vessel occlusion were included in the study. A binary logistic-regression model was used to determine independent predictors of good outcome and death.

Conclusions—Patients placed under GA during IAT for anterior circulation stroke appear to have a higher chance of poor neurologic outcome and mortality. There do not appear to be differences in hemorrhagic complications between the 2 groups. Future clinical trials with IAT can help elucidate the etiology of the differences in outcomes. (*Stroke*. 2010; 41:1175-1179.)

Key Words: acute stroke ■ thrombolysis ■ endovascular therapy ■ intra-arterial therapy ■ sedation

Endovascular therapy (also known as intra-arterial therapy, or IAT) for severe acute ischemic stroke (AIS) has been proven effective for middle cerebral artery occlusion in a randomized trial.¹ The effect of devices and pharmacologic agents on vessel recanalization and clinical outcomes has been reported in several clinical registries.²⁻⁹ Intraprocedural techniques including the use of sedatives have not been rigorously studied. General anesthesia (GA) is often used to (1) sedate and immobilize the patient to prevent wire-induced vessel injury; (2) facilitate blood pressure control; (3) provide

adequate patient ventilation and airway protection; and (4) make the procedure tolerable for patients. Conscious sedation (CS) may reduce delays to treatment and allow neurologic assessments during the procedure, which may reveal imminent or developing vascular complications as well as improvement or resolution of symptoms that may influence the rest of the procedure. The optimal modality of sedation during IAT for AIS has not been defined. We sought to determine whether there were safety concerns with the use of CS as well as differences in clinical outcomes between the 2

Owing to the mounting evidence that vessel recanalization is a powerful predictor of outcome in acute ischemic stroke,¹ endovascular acute stroke therapy is being used with increasing frequency. Given the severity of neurologic injury and alterations in the sensorium, patients undergoing acute stroke interventions typically do not cooperate with the procedure. Therefore, conscious sedation or general anesthesia with intubation is typically required in these circumstances. Though important to the eventual procedural outcome, no data regarding intraprocedural sedation or airway management are available for any of the endovascular stroke therapy trials conducted to date.²⁻⁵ Each method has advantages and disadvantages. Conscious sedation is not prone to the time delays neces-

sary for intubation and ventilation that may translate into considerable delays in time to recanalization. Another advantage of conscious sedation is the ability to perform neurologic assessments at different stages during the procedure. In addition, given that extubation of patients with severe neurologic deficit may only be possible days beyond the actual intervention, performing the procedure in the nonintubated state (NIS) may lead to shorter intensive care unit (ICU) stays, which may facilitate earlier mobilization. Withdrawal of care, a significant cause of mortality in patients with large strokes, is more likely to occur in intubated patients. It is therefore not surprising that intubation was found to be associated with mortality rates as high as 60% to 65% in patients with acute stroke.^{6,7}

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Controversies in Stroke

Section Editors: Carlos A. Molina, MD, PhD, and Magdy H. Selim, MD, PhD

The Case:

A patient presents with aphasia and right-sided weakness within 5 hours of onset, and occlusion of the proximal portion of the left middle cerebral artery. Emergent endovascular treatment is indicated.

The Questions:

- (1) Should intubation and artificial ventilation be performed before the procedure?
- (2) Is local anesthesia safe enough to be used, instead of general anesthesia, during the procedure?

The Controversy:

GENERAL ANESTHESIA IS PREFERABLE TO LOCAL ANESTHESIA DURING CEREBRAL ENDOVASCULAR PROCEDURES.

General Is Better Than Local Anesthesia During Endovascular Procedures

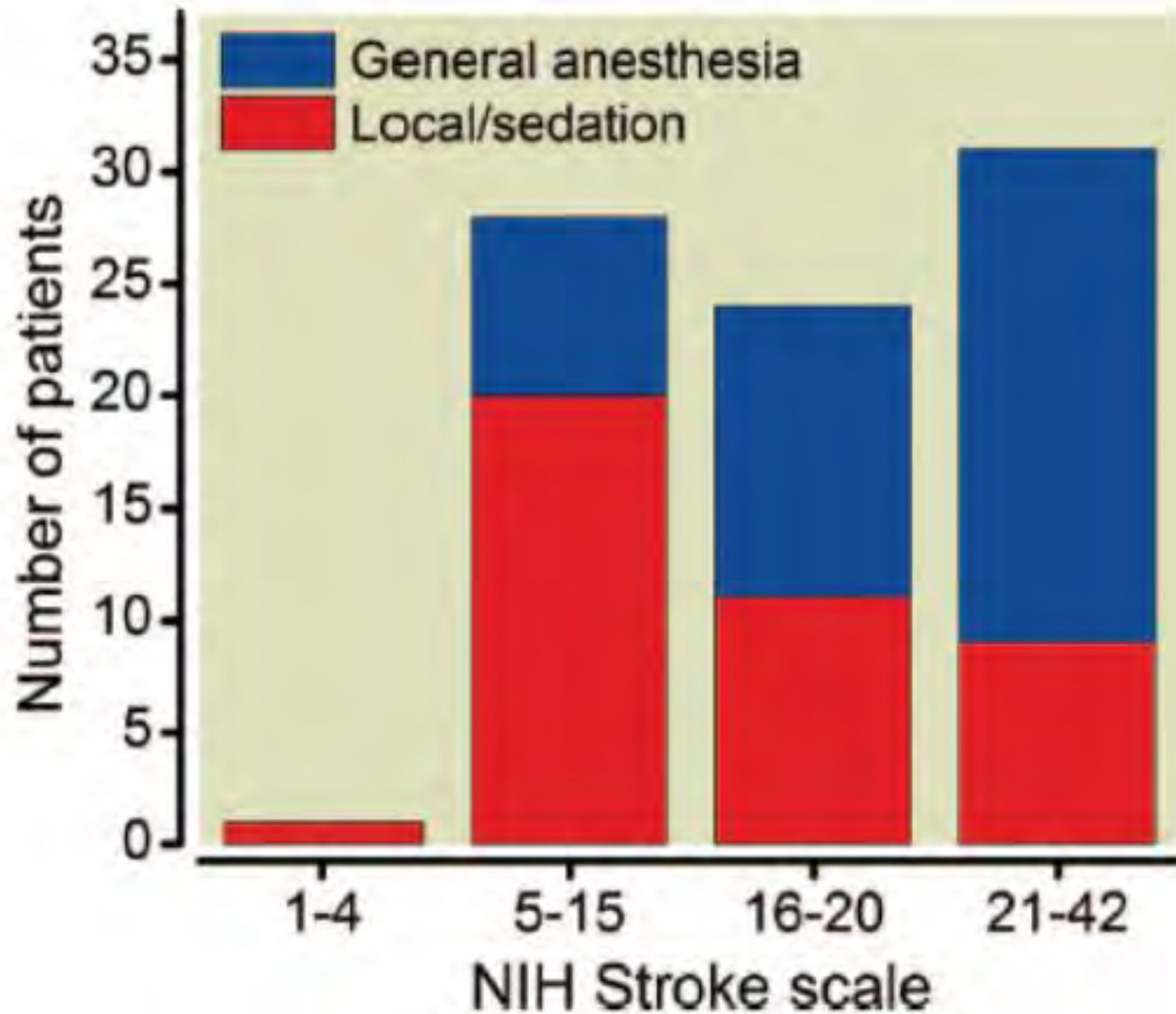
Breckenfeld C, Mattle HP, Schroth G. *Stroke*; 2010

Local Is Better Than General Anesthesia During Endovascular Acute Stroke Interventions

Gupta R. *Stroke*; 2010

Studies on general compared with regional anaesthesia for endovascular therapy for acute stroke				
Study	Patients	Anaesthetic management	Outcomes	Limitations
Jumaa and colleagues [23]	Retrospective, single-centre, 126 patients with acute ischaemic stroke	<u>Intubated or not intubated</u>	Intubated patients had longer ICU stays, increased in-hospital mortality, worse clinical outcome, larger final infarct size	Intubated patients had higher baseline NIHSS scores
Nichols and colleagues [24]	Retrospective, 75 patients enrolled in IMS II trial with anterior circulation stroke	<u>No sedation, mild sedation, heavy sedation, pharmacological paralysis</u>	Lower sedation was associated with good outcome (modified Rankin score of 0–2), lower mortality and higher successful reperfusion rates	Patients with more sedation had higher baseline NIHSS scores and had less successful angiography reperfusion rates
Abou-Chebl and colleagues [25]	Retrospective, multicentre, 980 patients	General anaesthesia or conscious sedation	Independent predictors of poor outcome and mortality: age, NIHSS, general anaesthesia, recanalization, ICH, carotid terminus occlusion. Predictors of poor outcome: no stent placed	Patients with general anaesthesia had higher baseline NIHSS scores and were more likely to have carotid terminus occlusions
Davis and colleagues [39]	Retrospective, single-centre, 96 patients	General anaesthesia or <u>local anaesthesia</u> (local anaesthesia includes light sedation with midazolam and fentanyl, if needed, provided by the stroke neurologist)	Independent predictors for good outcomes are local anaesthesia, low baseline stroke scores, and SBP >140 mmHg. General anaesthesia is correlated with low arterial pressures	Patients with general anaesthesia had higher baseline NIHSS scores. Good outcomes were associated with higher arterial pressures
Abou-Chebl and colleagues [37]	Retrospective, multicentre (18 sites), 281 patients	General anaesthesia (intubated) or local anaesthesia (not intubated, <u>but unknown if sedated</u>)	Independent predictors of mortality: hypertension, NIHSS, unsuccessful revascularization, nonutilization of balloon guide catheter, and general anaesthesia	Patients who received general anaesthesia had higher baseline NIHSS and lower baseline arterial pressures
Rai and colleagues [21]	Retrospective, single-centre, 190 patients	General anaesthesia or nongeneral anaesthesia (<u>both monitored anaesthesia care and local</u>)	General anaesthesia is not an independent factor when NIHSS, age, and recanalization are included. Arrival to puncture time is longer with general anaesthesia, and arterial pressure variations are larger with general anaesthesia	Patients who received general anaesthesia had higher baseline NIHSS. Time from arrival to the interventional suite, to puncture of the skin (i.e. start of intervention) was longer with general anaesthetic.

BIAIS DE SELECTION

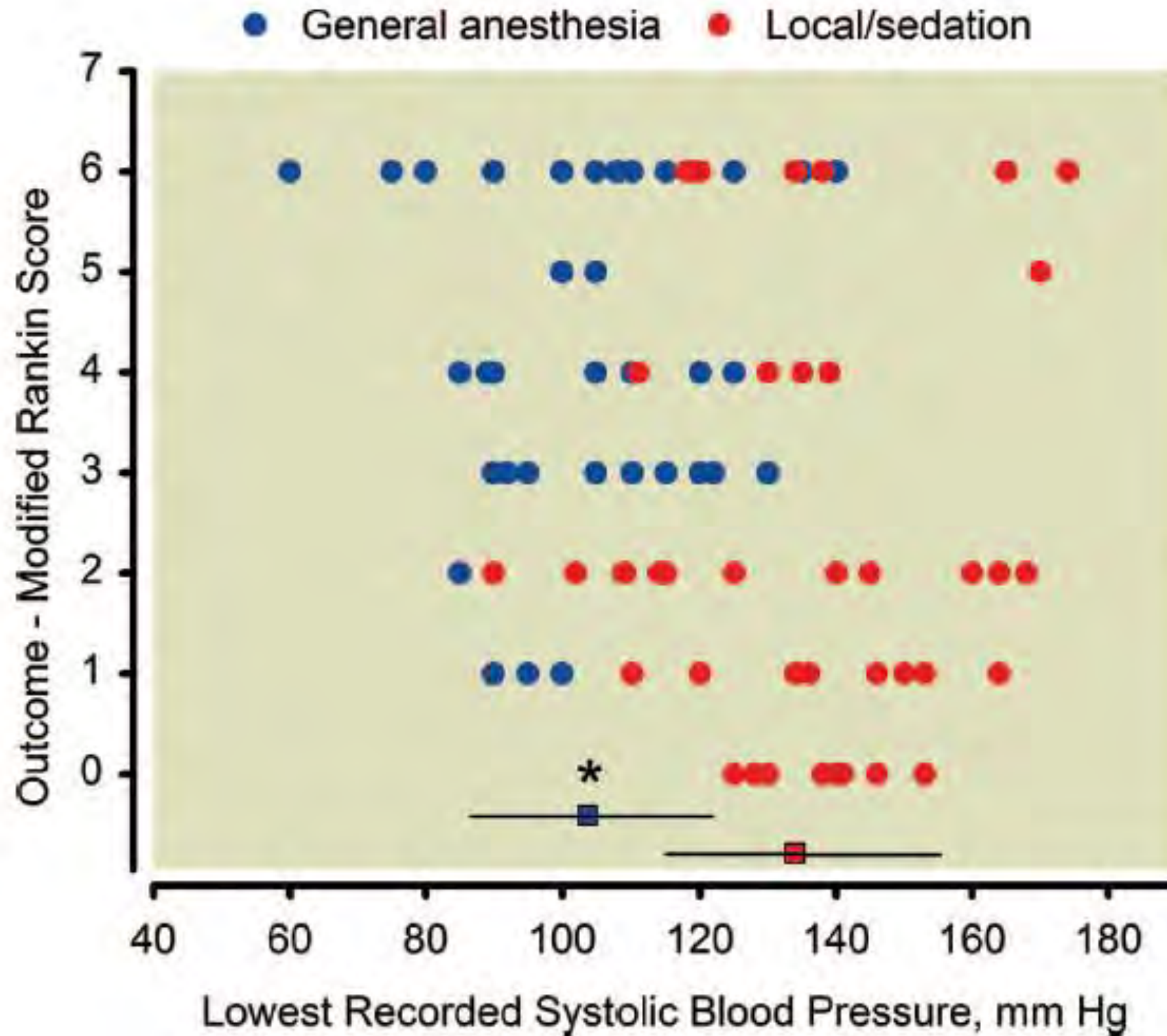


What Matters during Endovascular Therapy for Acute Stroke

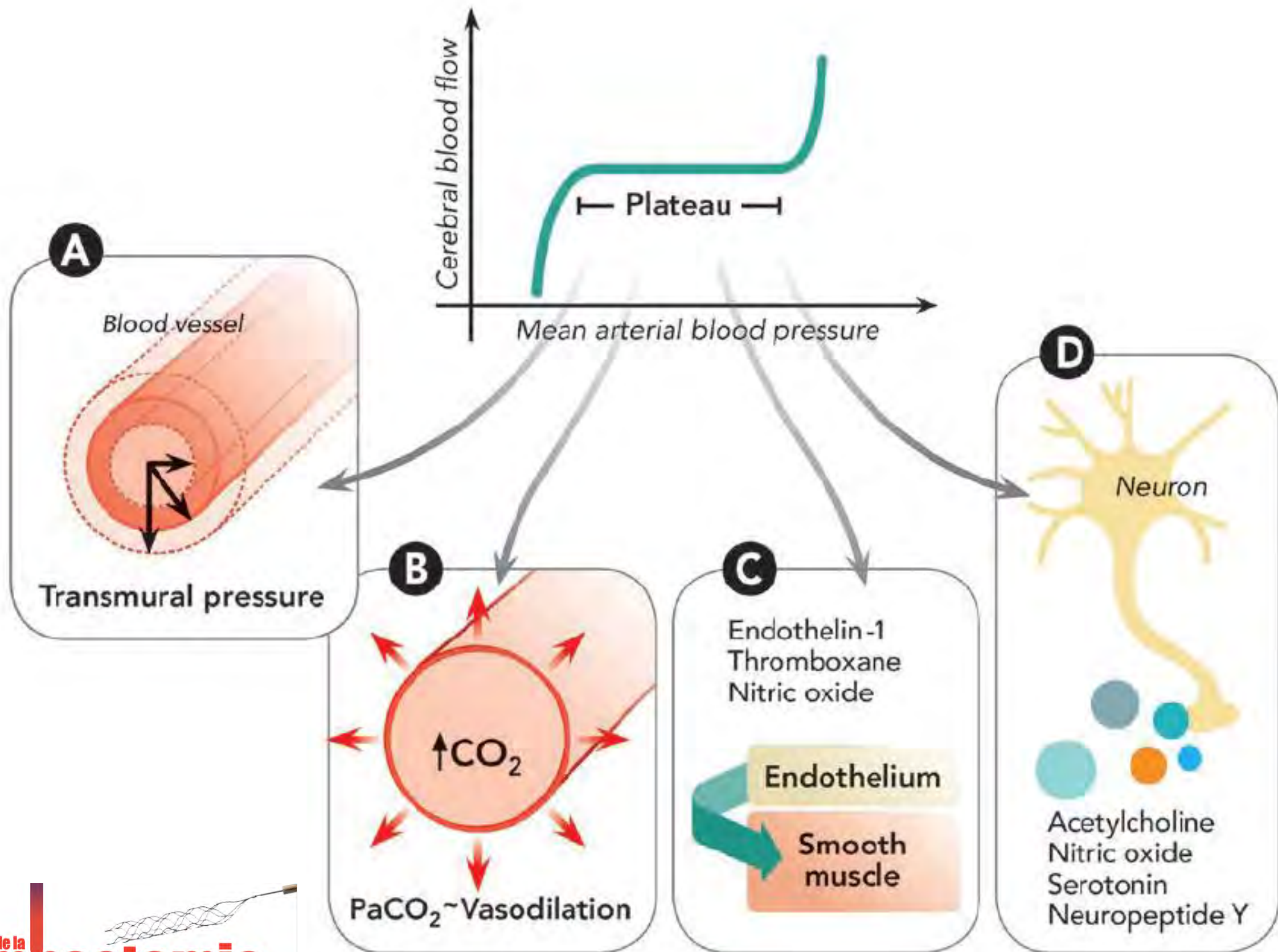
Anesthesia Technique or Blood Pressure Management?

E.J. Heyer, Z.H. Anastasian, P.M. Meyers. *Anesthesiology*; 2012

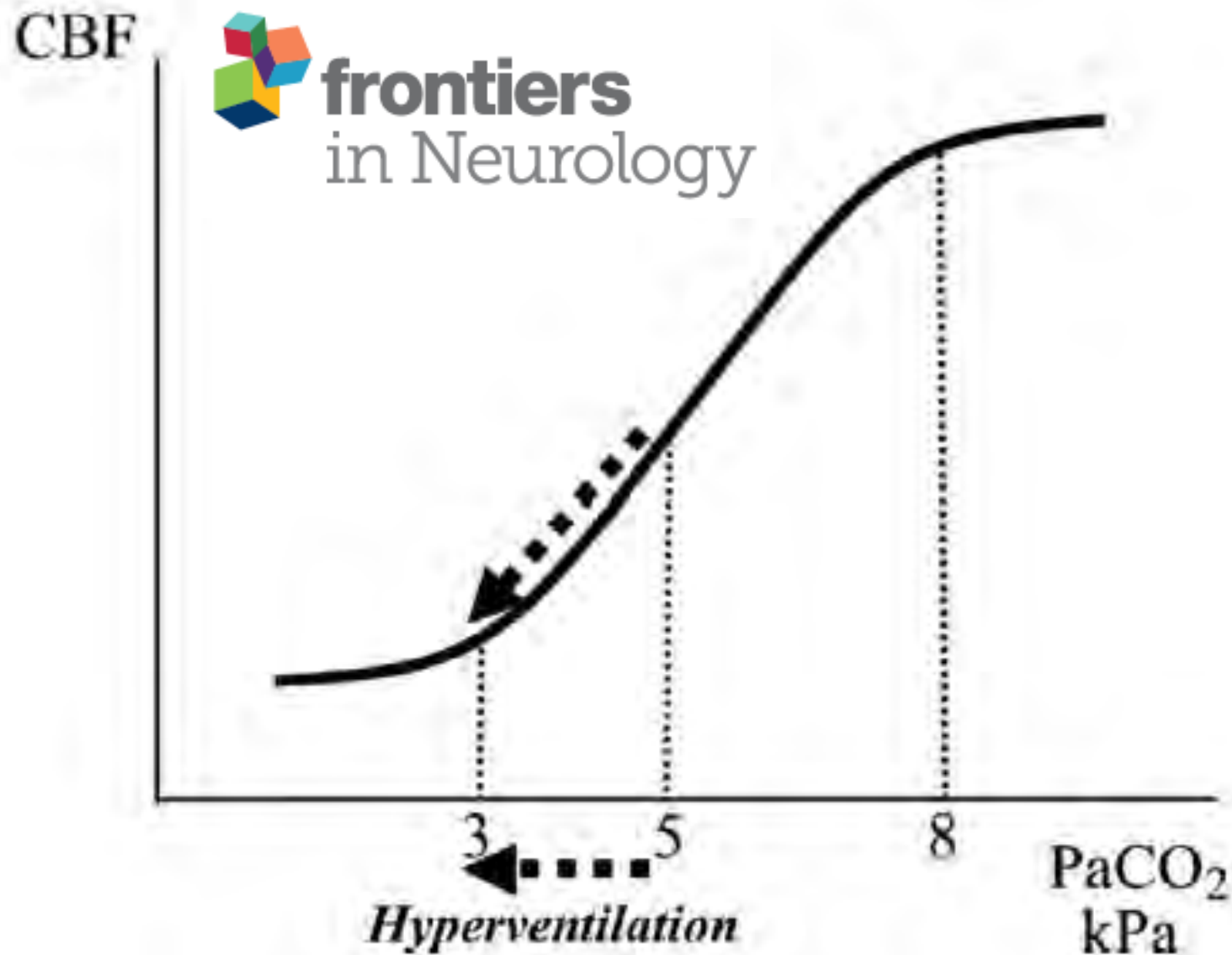
AG: ↘ DSC pénombre ?



AUTOREGULATION CEREBRALE



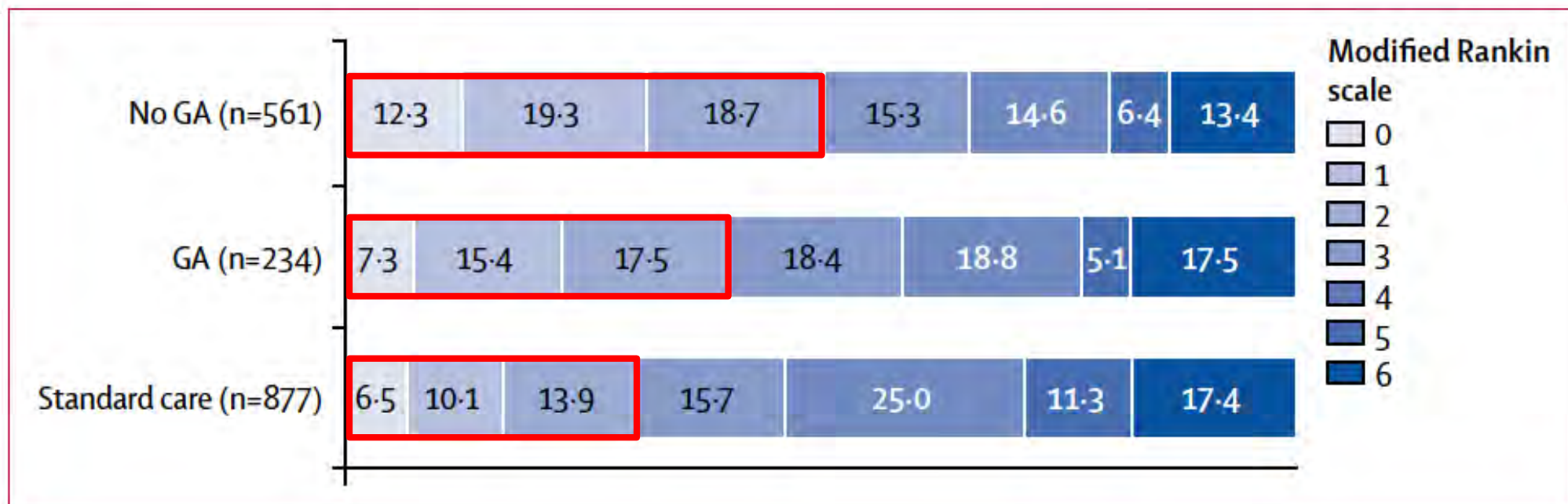
CO₂ → Tonus Vasomoteur → DSC



Effect of general anaesthesia on functional outcome in patients with anterior circulation ischaemic stroke having endovascular thrombectomy versus standard care: a meta-analysis of individual patient data

Bruce CV Campbell, Wim H van Zwam, Mayank Goyal, Bijoy K Menon, Diederik W J Dippel, Andrew M Demchuk, Serge Bracad, Philip White, Antoni Dávalos, Charles B L M Majoie, Aad van der Lugt, Gary A Ford, Natalia Pérez de la Ossa, Michael Kelly, Romain Bourcier, Geoffrey A Donnan, Yvo B W E M Roos, Oh Young Bang, Raul G Nogueira, Thomas G Devlin, Lucie A van den Berg, Frédéric Clarençon, Paul Burns, Jeffrey Carpenter, Olvert A Berkhemer, Dileep R Yavagal, Vitor Mendes Pereira, Xavier Ducrocq, Anand Dixit, Helena Quesada, Jonathan Epstein, Stephen M Davis, Olav Jansen, Marta Rubiera, Xabier Urra, Emilien Micard, Hester F Lingsma, Olivier Naggara, Scott Brown, Francis Guillemin*, Keith W Muir*, Robert J van Oostenbrugge*, Jeffrey L Saver*, Tudor G Jovin*, Michael D Hill*, Peter J Mitchell*, for the HERMES collaborators

	Standard care (n=893)	Endovascular thrombectomy with GA (n=236)	Endovascular thrombectomy without GA (n=561)	GA vs standard care*		No GA vs standard care*		No GA vs GA*	
				Effect size OR (95%CI)	p value	Effect size OR (95%CI)	p value	Effect size OR (95%CI)	p value
Primary outcome									
Functional outcome at 90 days (mRS)†	4 (2-5)	3 (2-4)	2 (1-4)	..	..	..	..	..	..
Covariate adjusted common odds ratio	..	..	..	1.52 (1.09-2.11)	0.014	2.33 (1.75-3.10)	<0.0001	1.53 (1.14-2.04)	0.0044
Propensity-score stratification common odds ratio	..	..	..	1.42 (1.09-1.84)	0.0084	2.21 (1.65-2.95)	<0.0001	1.44 (1.08-1.92)	0.012





Advantages of general anaesthesia

Patient's airway is secured
Minimized risk of aspiration
Maintained oxygenation
Optimal control of carbon dioxide levels
Decreased patient movement
No pain on clot retrieval

Disadvantages of general anaesthesia

(Potential) Delay in time to revascularization
Potential for allergy/reaction to anaesthetics
Increased risk of haemodynamic variations
Pharmacological effects on cerebral perfusion
Requires postanaesthetic recovery area
Equipment/staffing costs

Effect of Conscious Sedation vs General Anesthesia on Early Neurological Improvement Among Patients With Ischemic Stroke Undergoing Endovascular Thrombectomy

A Randomized Clinical Trial

Silvia Schönenberger, MD; Lorenz Uhlmann, MSc; Werner Hacke, MD, PhD; Simon Schieber, MD; Sibü Mundiyanapurath, MD; Jan C. Purrucker, MD; Simon Nagel, MD; Christina Klose; Johannes Pfaff, MD; Martin Bendszus, MD; Peter A. Ringleb, MD; Meinhard Kieser, PhD; Markus A. Möhlenbruch, MD; Julian Bösel, MD, FNCS

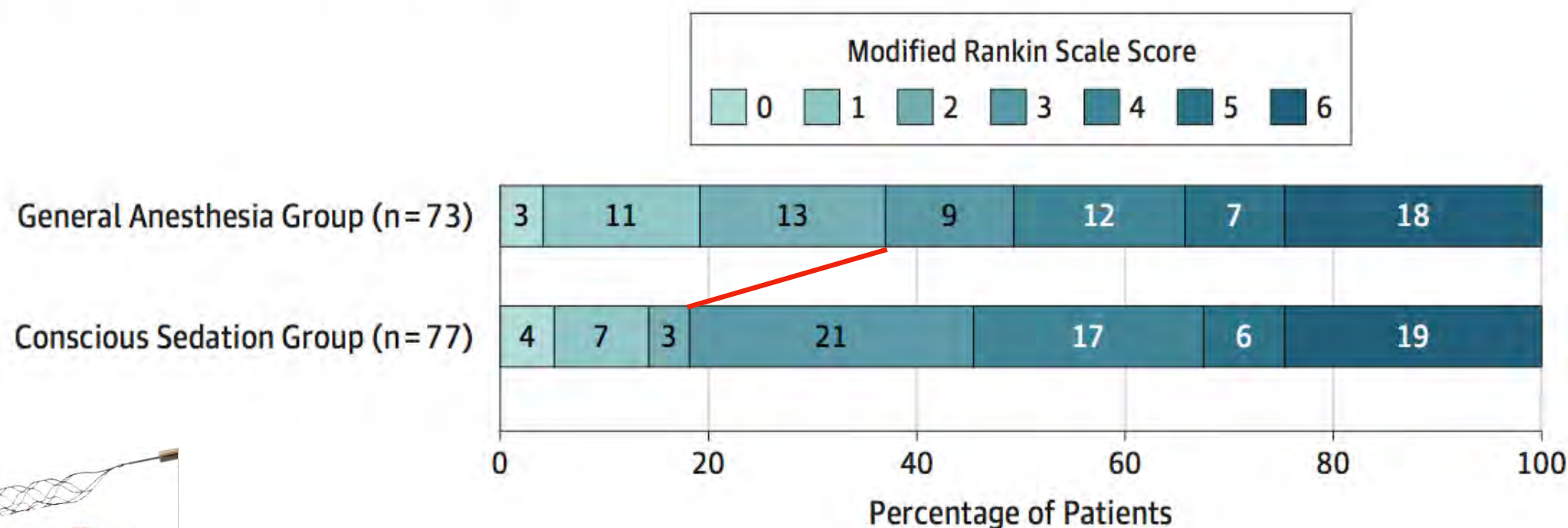
Table 3. Primary and Secondary Outcome Results

Variable	General Anesthesia (n = 73)	Conscious Sedation (n = 77)	Difference (95% CI)	P Value ^a
Primary Outcome				
Change in NIHSS ^b , mean (95% CI)	-3.2 (-5.6 to -0.8)	-3.6 (-5.5 to -1.7)	-0.4 (-3.4 to 2.7)	.82 ^c
Change in NIHSS, median (IQR)	-5.0 (-10.0 to 2.0)	-4.0 (-10 to 2.0)		
NIHSS after 24 h, mean (SD)	13.6 (11.1)	13.6 (9.0)	0.0 (-3.3 to 3.3)	>.99 ^d

Effect of Conscious Sedation vs General Anesthesia on Early Neurological Improvement Among Patients With Ischemic Stroke Undergoing Endovascular Thrombectomy A Randomized Clinical Trial

Silvia Schönenberger, MD; Lorenz Uhlmann, MSc; Werner Hacke, MD, PhD; Simon Schieber, MD; Sibumundiyanapurath, MD; Jan C. Purrucker, MD; Simon Nagel, MD; Christina Klose; Johannes Pfaff, MD; Martin Bendszus, MD; Peter A. Ringleb, MD; Meinhard Kieser, PhD; Markus A. Möhlenbruch, MD; Julian Bösel, MD, FNCS

Figure 3. Functional Outcome at 90-Day Follow-up in the Intent-to-Treat Population



General Anesthesia Versus Conscious Sedation for Endovascular Treatment of Acute Ischemic Stroke The AnStroke Trial (Anesthesia During Stroke)

Pia Löwhagen Hendén, MD*; Alexandros Rentzos, MD*; Jan-Erik Karlsson, MD, PhD;
Lars Rosengren, MD, PhD; Birgitta Leiram, MD; Henrik Sundeman, MD, PhD;
Dennis Dunker, MD; Kunigunde Schnabel, MD†; Gunnar Wikholm, MD, PhD;
Mikael Hellström, MD, PhD; Sven-Erik Ricksten, MD, PhD

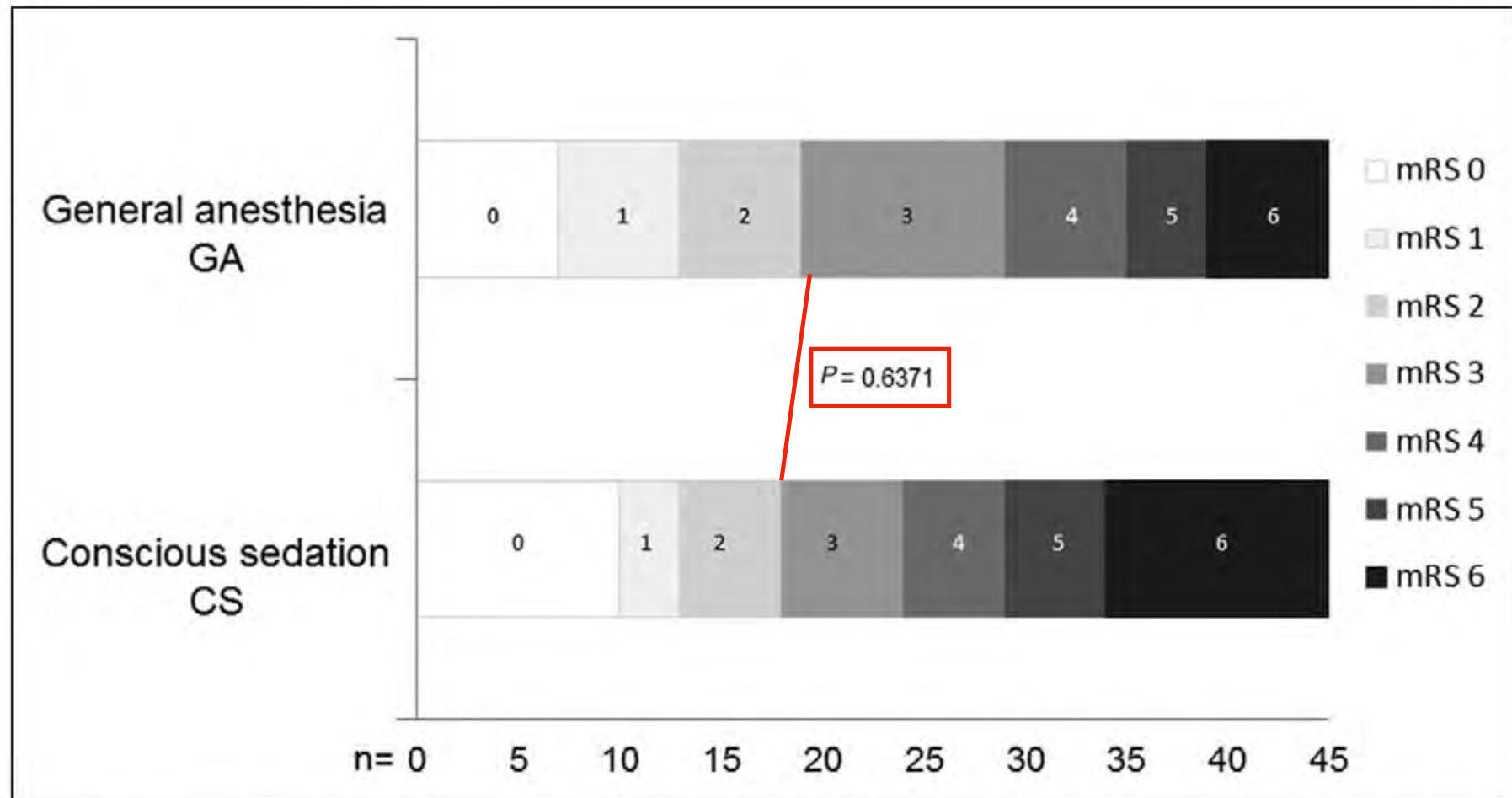
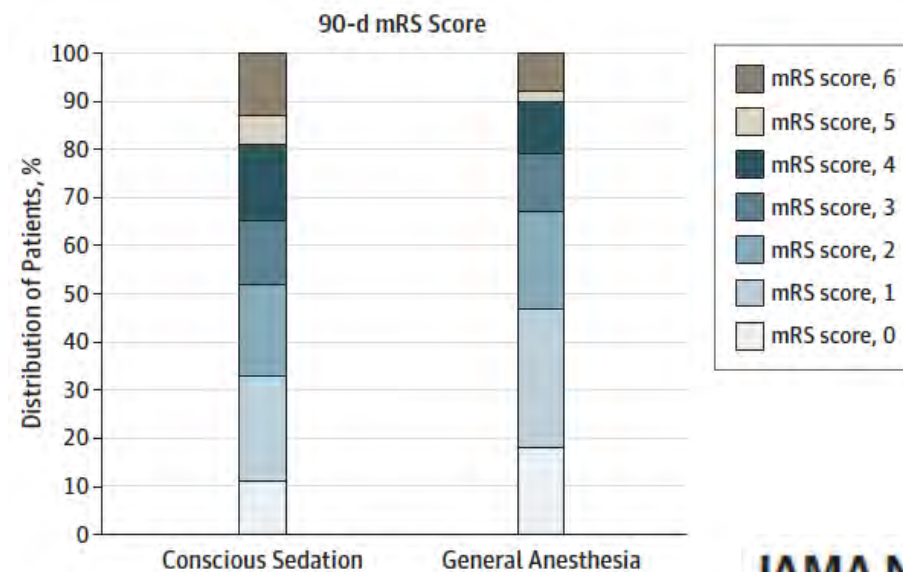


Figure 2. Neurological outcome expressed as modified Rankin Scale (mRS) score. GA indicates general anesthesia.

Effect of General Anesthesia and Conscious Sedation During Endovascular Therapy on Infarct Growth and Clinical Outcomes in Acute Ischemic Stroke A Randomized Clinical Trial

Claus Z. Simonsen, MD, PhD; Albert J. Yoo, MD, PhD; Leif H. Sørensen, MD; Niels Juul, MD; Søren P. Johnsen, MD, PhD; Grethe Andersen, MD, DMSc; Mads Rasmussen, MD, PhD

Outcome	General Anesthesia (n = 65)	Conscious Sedation (n = 63)	P Value
Successful reperfusion (mTICI 2b-3), No. (%)	50 (76.9)	38 (60.3)	.04
Acute infarct volume, median (IQR), mL	10.5 (2.4-23.6)	13.3 (5.2-31.1)	.26
Final infarct volume, median (IQR), mL	22.3 (8.1-64.5)	38.0 (16.7-128.0)	.04
Infarct volume growth, median (IQR), mL	8.2 (2.2-38.6)	19.4 (2.4-79.0)	.10
90-d mRS score, median (IQR)	2 (1-3)	2 (1-4)	.04
NIHSS score in 24 h, median (IQR)	6 (3-14)	10 (2-19)	.19
Change in NIHSS score after 24 h, median (IQR)	-10 (-14 to -5)	-7 (-13 to 0)	.11



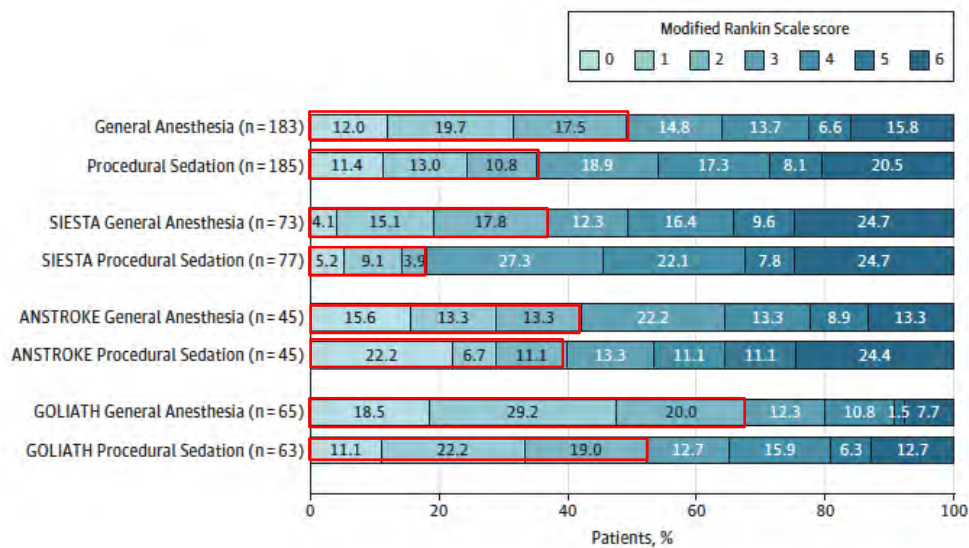
Association of General Anesthesia vs Procedural Sedation With Functional Outcome Among Patients With Acute Ischemic Stroke Undergoing Thrombectomy

A Systematic Review and Meta-analysis

Silvia Schönerberger, MD; Pia Löwhagen Hendén, MD; Claus Z. Simonsen, MD; Lorenz Uhlmann, MSc; Christina Klose; Johannes A. R. Pfaff, MD; Albert J. Yoo, MD; Leif H. Sørensen, MD; Peter A. Ringleb, MD; Wolfgang Wick, MD; Meinhard Kieser, PhD; Markus A. Möhlenbruch, MD; Mads Rasmussen, MD; Alexandros Rentzos, MD; Julian Bösel, MD

**AVC circulation antérieure,
Données individuelles
CJP: mRS J90
NIHSS≥10
368 patients, Europe**

**11,5% de conversion → AG (agitation, contraintes procédures...)
Même délais de reperfusion**



Non-Time-Related Outcomes	General Anesthesia (n = 183)	Procedural Sedation (n = 185)	Absolute Difference (95% CI) ^a	General Anesthesia vs Procedural Sedation OR (95% CI) ^b	P Value ^b
Primary Outcome					
mRS after 3 mo ^{c,d}				1.58 (1.09 to 2.29) ^e	.02
Secondary Outcomes, No. (%)					
mRS score 0-2 after 3 mo	90 (49.2)	65 (35.1)	14.0 (4.1 to 24.0)	2.16 (1.31 to 3.54)	.003
mRS score 0-3 after 3 mo	117 (63.9)	100 (54.1)	9.9 (-0.1 to 19.9)	1.73 (1.06 to 2.82)	.03
In-hospital mortality	14 (7.7)	15 (8.1)	-0.5 (-6.0 to 5.0)	0.75 (0.32 to 1.75)	.51
Early neurological improvement in NIHSS ^f	-6.6 (-8.0 to -5.3)	-5.4 (-6.7 to -4.2)	-1.2 (-3.0 to 0.7)	-1.11 (-2.90 to 0.68) ^g	.22
Successful reperfusion (mTICI score of 2b or 3) ^h	133 (72.7)	117 (63.2)	9.4 (-0.1 to 18.9)	1.84 (1.12 to 3.01)	.02
Infarction growth, mLⁱ					
Median (IQR)	(n = 110) 15.0 (3.5 to 49.9)	(n = 108) 21.0 (4.5 to 72.5)	-11.2 (-32.4 to 10.0)	-14.8 (-35.5 to 6.0) ^g	.17
Mean (SD)	44.3 (76.8)	55.5 (82.9)			
Hypotension (<20% of baseline)	143 (80.8)	95 (53.1)	27.7 (18.4 to 37.1)	4.3 (2.6 to 7.1)	<.001
Systolic blood pressure variability (>180 or <120 mm Hg)	145 (79.7)	114 (62.3)	17.4 (8.2 to 26.5)	2.4 (1.5 to 3.9)	<.001
Start of antibiotics within 72 h for suspected pneumonia ^j	34 (18.6)	36 (19.5)	-0.9 (-8.9 to 7.1)	0.85 (0.5 to 1.46)	.66

Conclusion des auteurs

- Meilleur pronostic sous AG → ↗ taux de reperfusion → facilité technique (immobilité)
- Si équipe dédiée pour anesthésie: pas d'augmentation des délais sous AG
- Les hypoTA et variabilité PA + fq sous AG mais n'ont pas d'impact s'ils sont faibles (protocoles, objectifs PA, gestion HDM avec amines...)
- Effet neuroprotecteur de AG (pharmacologiques, hypothermie, normocapnie...) ne peuvent être démontrés



- **Validité extrinsèque?**
- **Gestion de la sédation?**
- **AVC moins sévères? (NIHSS<10)**
- **AVC circulation postérieure?**

Open access

Protocol

BMJ Open GASS Trial study protocol: a multicentre, single-blind, randomised clinical trial comparing general anaesthesia and sedation during intra-arterial treatment for stroke

350 patients
CJP mRS
J90

Axelle Maurice,¹ Jean-Christophe Ferré,² Thomas Ronzière,³ Jean-Michel Devys,⁴ Aurelie Subileau,⁵ Marc Laffon,⁶ Bruno Laviolle,⁷ Helene Beloeil,¹ on behalf of the SFAR research network

BMJ Open 2019;9:e024249. doi:10.1136/bmjopen-2018-024249

Open access

Protocol

BMJ Open Sedation versus general anaesthesia in endovascular therapy for anterior circulation acute ischaemic stroke: the multicentre randomised controlled AMETIS trial study protocol

270 patients
CJP
composite:
mRS J90 et
complications

Russell Chabanne,¹ Charlotte Fernandez-Canal,¹ Vincent Degos,² Anne-Claire Lukaszewicz,³ Lionel Velly,⁴ Segolene Mrozek,⁵ Pierre-François Perrigault,⁶ Serge Molliex,⁷ Benoit Tavernier,⁸ Claire Dahyot-Fizelier,⁹ Franck Verdonk,¹⁰ Elodie Caumon,¹¹ Aurélie Masgrau,¹¹ Marc Begard,¹ Emmanuel Chabert,¹² Anna Ferrier,¹³ Samir Jaber,¹⁴ Jean-Etienne Bazin,¹ Bruno Pereira,¹⁵ Emmanuel Futier,^{1,16} for the ANARLF Network and the AMETIS study group *BMJ Open* 2019;9:e027561. doi:10.1136/bmjopen-2018-027561

AVC circulation antérieure

Protocol

Choice of ANesthesia for EndoVAScular Treatment of Acute Ischemic Stroke: Protocol for a randomized controlled (CANVAS) trial

Yuming Peng¹, Yan Li¹, Minyu Jian¹, Xiaoyuan Liu¹, Jian Sun², Bo Jia¹, Jia Dong¹, Min Zeng¹, Nan Lin¹, Li Zhang^{3,4}, Adrian W. Gelb⁵, Matthew TV Chan⁶ and Ruquan Han¹

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SAGE

640 patents
Non infériorité
Monocentrique
CJP mRS J90

COMMENT & RESPONSE

Additional Factors Regarding Clinical Outcomes of General Anesthesia and Conscious Sedation for Acute Ischemic Stroke

It seems that no clinical parameter was used to evaluate the conduction of CS, which could be highly variable between practitioners. One could imagine that some patients undergoing CS were treated with an inadequate sedation level that could affect outcomes, notably via ventilatory parameters, such as oxygenation or carbon dioxide tension.

Chabanne R Futier E. *JAMA Neurol*; 2018

Niveau de sédation (Recommandations ASA 2002)

	Sédation minimale (Anxiolyse)	Sédation modérée (Sédation consciente)	Sédation profonde/Analgésie	Anesthésie Générale
Niveau de conscience	Réponse normale à la stimulation verbale	Réponse orientée à la stimulation verbale ou à la stimulation tactile	Réponse orientée à des stimulations verbales répétées ou à la stimulation douloureuse	Non réveillable même avec stimulis douloureux
Gestion des voies aériennes supérieures	Non affectée	Pas de nécessité d'intervention/traitement	Intervention/traitement possible	Intervention généralement nécessaire
Ventilation spontanée	Non affectée	Adéquate	Peut-être inadéquate	Fréquemment inadéquate
Fonction cardiovasculaire	Non affectée	Habituellement conservée	Habituellement conservée	Peut être dégradée

THROMBECTOMIE SOUS ANESTHESIE LOCALE? SANS ANESTHESISTE?



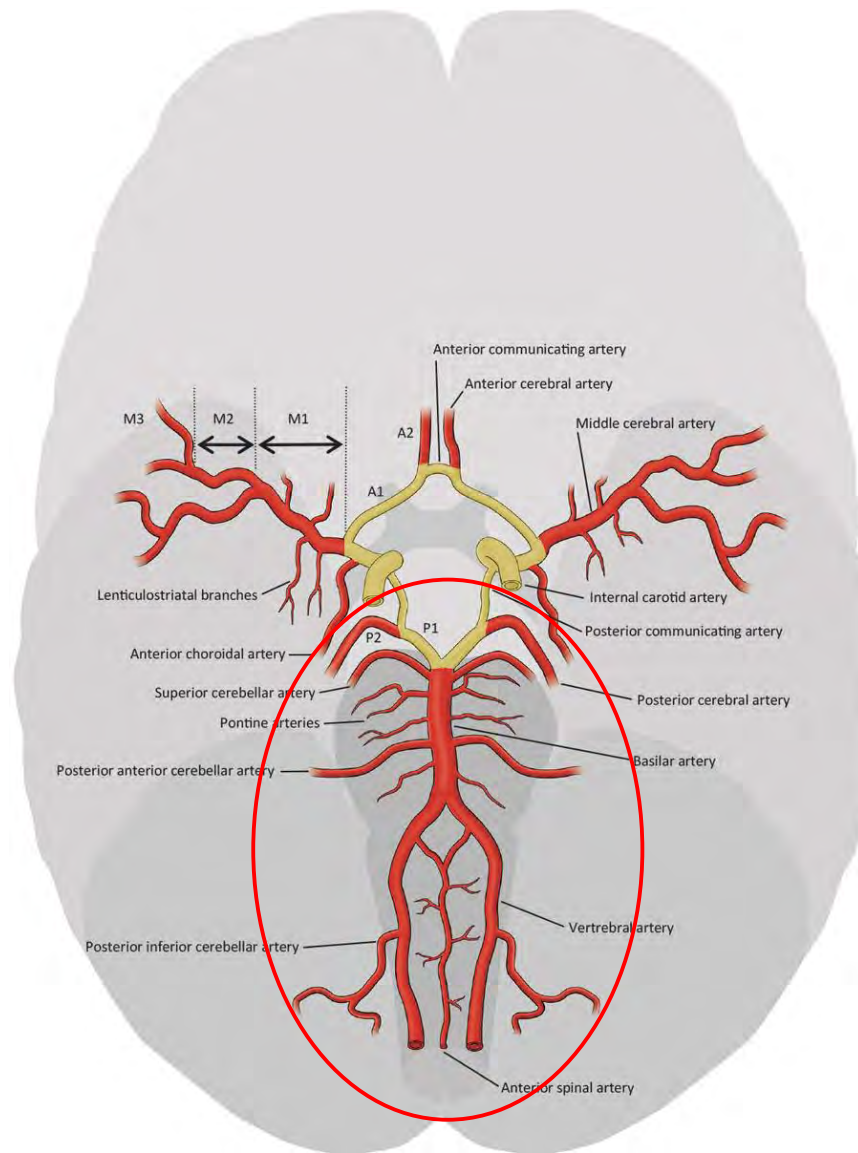
THROMBECTOMIE SOUS ANESTHESIE LOCALE? SANS ANESTHESISTE?



Thrombectomie sous AL : comment faire et quand savoir dire « STOP » ?

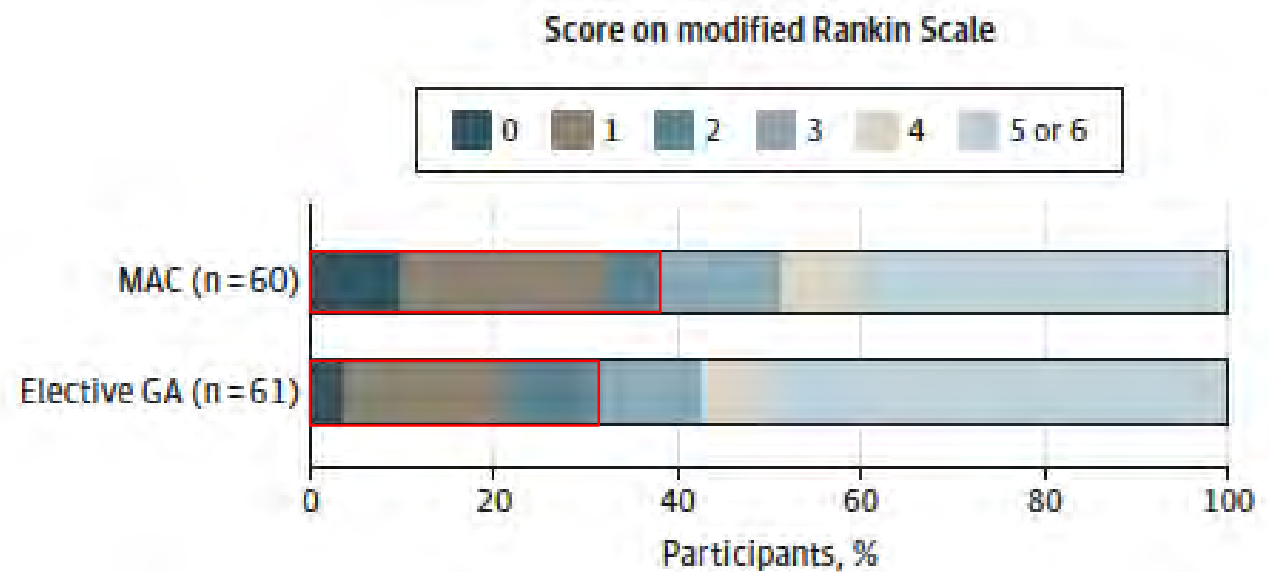
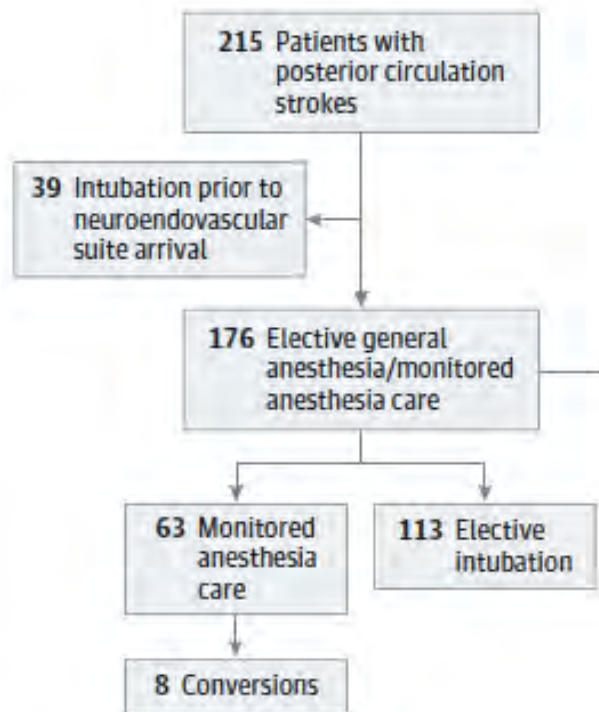
- Seule ou associée à sédation?
- Eviter les raccourcis: « pas d'AG, pas d'équipe d'anesthésie » ou « Puisque l'équipe d'Anesthésie est indisponible, la procédure devra bien avoir lieu sous AL. »
- Choix d'équipe, réfléchi, au bénéfice du patient et non contraint
- Installation +++
- Peu douloureux sauf quand engagement du caillot dans dispositif et retrait, bref
- Mouvements, Agitation, Coma, Inhalation ↪ Anesthésie Générale
- Objectifs tensionnels +++
- NIHSS élevé? Aphasie? Lésion tandem? Comorbidités?

AVC VERTEBRO-BASILAIRE



Monitored Anesthesia Care vs Intubation for Vertebrobasilar Stroke Endovascular Therapy

Ashutosh P. Jadhav, MD, PhD; Mehdi Bouslama, MD; Amin Aghaebrahim, MD; Leticia C. Rebello, MD; Matthew T. Starr, MD; Diogo C. Haussen, MD; Manasa Ranginani, MBBS; Matthew K. Whalin, MD, PhD; Tudor G. Jovin, MD; Raul G. Nogueira, MD



NS

AVC postérieur: envisageable sous sédation, sélection +++

AHA/ASA Guideline

2015 AHA/ASA Focused Update of the 2013 Guidelines for the Early Management of Patients With Acute Ischemic Stroke Regarding Endovascular Treatment

16. It might be reasonable to favor conscious sedation over general anesthesia during endovascular therapy for acute ischemic stroke. However, the ultimate selection of anesthetic technique during endovascular therapy for acute ischemic stroke should be individualized based on patient risk factors, tolerance of the procedure, and other clinical characteristics. Randomized trial data are needed (*Class IIb; Level of Evidence C*). (New recommendation)

Powers et al. *Stroke*; 2015

RECOMMENDATIONS

AHA/ASA Guideline

2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke

A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association

16. It is reasonable to select an anesthetic technique during endovascular therapy for AIS on the basis of individualized assessment of patient risk factors, technical performance of the procedure, and other clinical characteristics. Further randomized trial data are needed.

Ila

B-R

Recommendation revised from 2015 Endovascular.

7. La TM doit être réalisée par un neuroradiologue interventionnel entraîné et expérimenté, répondant aux conditions d'autorisation définies par l'arrêté du 15 mars 2010 (art. D.6124-149 du code de Santé Publique). (Grade B, Niveau 2b)
8. Le choix de la technique d'anesthésie est décidé pour chaque patient, conjointement par l'anesthésiste et le neuroradiologue interventionnel. L'objectif est de réaliser la TM dans les meilleures conditions pour le patient et le neuroradiologue, sans réduire le délai de mise en route de la TM. (Grade C, Niveau 2b)
9. La TM doit être réalisée avec des stents retrievers approuvés par les autorités de santé. (Grade A, Niveau 1a)



HAUTE AUTORITÉ DE SANTÉ

Organisation de la prise en charge précoce de l'accident vasculaire cérébral ischémique aigu par thrombectomie mécanique

Juillet 2018

Conclusions sur la constitution des équipes et la formation des professionnels

Composition de l'équipe de TM

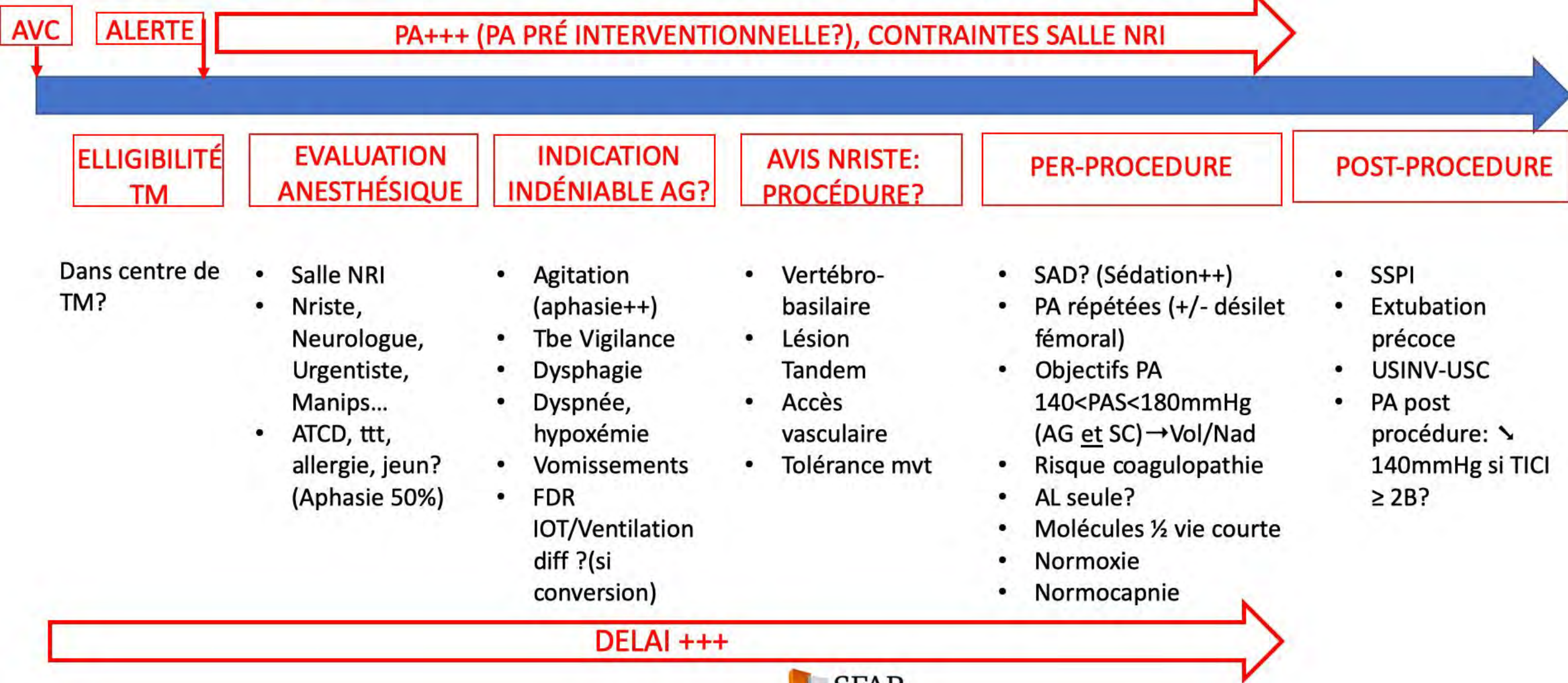
Selon l'ensemble des recommandations analysées et l'avis des parties prenantes, la composition de l'équipe médicale et paramédicale requise pour la réalisation de la TM dans les conditions optimales est la suivante :

- un médecin opérateur de TM (*cf.* compétences ci-dessous) ;
 - un anesthésiste ayant l'expérience de la prise en charge de patients traités par des actes de neuroradiologie interventionnelle ;
 - un manipulateur d'électroradiologie médicale ;
 - un infirmier d'anesthésie diplômé d'État (IADE) ;
 - un aide-opérateur (médecin, infirmier ou manipulateur d'électroradiologie médicale).
-
- La sélection des patients éligibles à la TM est réalisée par concertation entre un neurologue, un neuroradiologue et un anesthésiste sur la base des examens cliniques et des données d'imagerie, réalisés sur place ou transmis par télémédecine. Le premier acte est de réaliser une imagerie cérébrale afin de confirmer l'infarctus cérébral.

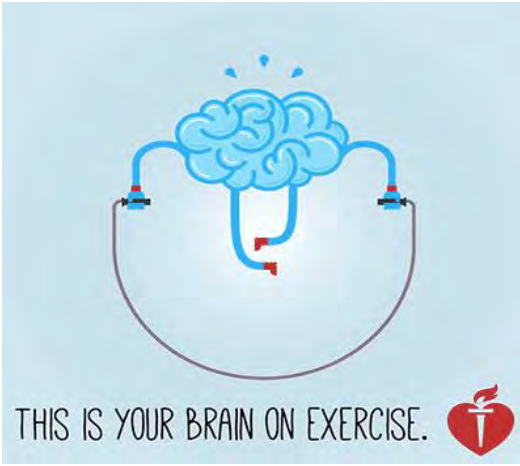


Neuroréanimation

Journée **MonoThématique** de la SFAR



AU FINAL... DU BON SENS



Stroke : Time lost is brain lost

- Urgence interventionnelle absolue
- DELAIS +++
- PRESSION ARTERIELLE +++

THROMBECTOMIE MECANIQUE INTRACRANIENNE: GESTION DES TRAITEMENTS ADJUVANTS: AAP, AC



THROMBECTOMIE MECANIQUE INTRACRANIENNE: GESTION DES TRAITEMENTS ADJUVANTS: AAP, AC



Peu de données dans le contexte de la thrombectomie

THROMBECTOMIE MECANIQUE INTRACRANIENNE: GESTION DES TRAITEMENTS ADJUVANTS: AAP, AC

The use of IV alteplase in patients taking direct thrombin inhibitors or direct factor Xa inhibitors has not been firmly established but may be harmful.† (Class III: Harm; LOE C-EO)‡§ IV alteplase should not be administered to patients taking direct thrombin inhibitors or direct factor Xa inhibitors unless laboratory tests such as aPTT, INR, platelet count, ecarin clotting time, thrombin time, or appropriate direct factor Xa activity assays are normal or the patient has not received a dose of these agents for >48 h (assuming normal renal metabolizing function).

8. IV alteplase should not be administered to patients who have received a treatment dose of low-molecular-weight heparin (LMWH) within the previous 24 hours.

For patients taking warfarin and with an INR ≤ 1.7 who present in the 3- to 4.5-h window, IV alteplase appears safe and may be beneficial.† (Class IIb; LOE B-NR)‡

15. The risk of antithrombotic therapy within the first 24 hours after treatment with IV alteplase (with or without EVT) is uncertain. Use might be considered in the presence of concomitant conditions for which such treatment given in the absence of IV alteplase is known to provide substantial benefit or withholding such treatment is known to cause substantial risk.

THROMBECTOMIE MECANIQUE INTRACRANIENNE: GESTION DES TRAITEMENTS ADJUVANTS: AAP, AC

IV alteplase is recommended for patients taking antiplatelet drug monotherapy before stroke on the basis of evidence that the benefit of alteplase outweighs a possible small increased risk of sICH.† (Class I; LOE A)

IV alteplase is recommended for patients taking antiplatelet drug combination therapy (eg, aspirin and clopidogrel) before stroke on the basis of evidence that the benefit of alteplase outweighs a probable increased risk of sICH.† (Class I; LOE B-NR)‡

Antiplatelet agents that inhibit the glycoprotein IIb/IIIa receptor should not be administered concurrently with IV alteplase outside a clinical trial.† (Class III: Harm; LOE B-R)‡§

THROMBECTOMIE MECANIQUE INTRACRANIENNE: GESTION DES TRAITEMENTS ADJUVANTS: AAP, AC

1. Administration of **aspirin** is recommended in patients with AIS **within 24 to 48 hours after onset**. For those treated with IV alteplase, aspirin administration is generally delayed until 24 hours later but might be considered in the presence of concomitant conditions for which such treatment given in the absence of IV alteplase is known to provide substantial benefit or withholding such treatment is known to cause substantial risk.

7. For patients with AIS and hemorrhagic transformation, initiation or **continuation of antiplatelet or anticoagulation therapy** may be considered, depending on the specific clinical scenario and underlying indication.

THROMBECTOMIE MECANIQUE INTRACRANIENNE: GESTION DES TRAITEMENTS ADJUVANTS: AAP, AC

Table 8. Management of Symptomatic Intracranial Bleeding Occurring Within 24 Hours After Administration of IV Alteplase for Treatment of AIS

Class IIb, LOE C-EO	
Stop alteplase infusion	
Emergent nonenhanced head CT	
PFC Fibrinogene +++	Cryoprecipitate (includes factor VIII): 10 U infused over 10–30 min (onset in 1 h, peaks in 12 h); administer additional dose for fibrinogen level of <200 mg/dL
	Tranexamic acid 1000 mg IV infused over 10 min OR ε-aminocaproic acid 4–5 g over 1 h, followed by 1 g IV until bleeding is controlled (peak onset in 3 h)
Hematology and neurosurgery consultations	
Supportive therapy, including BP management, ICP, CPP, MAP, temperature, and glucose control	

**THROMBECTOMIE MECANIQUE INTRACRANIENNE:
GESTION DES TRAITEMENTS ADJUVANTS: AAP, AC**

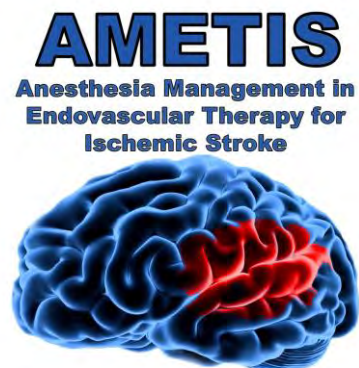


**Héparine ou Antiagrégant per procédure en
l'absence de thrombolyse?**

Hankey GJ. *Lancet*; 2016

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 - Statisticien B Pereira
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 - Investigateurs et personnel des 11 centres participants
 - Et les patients +++



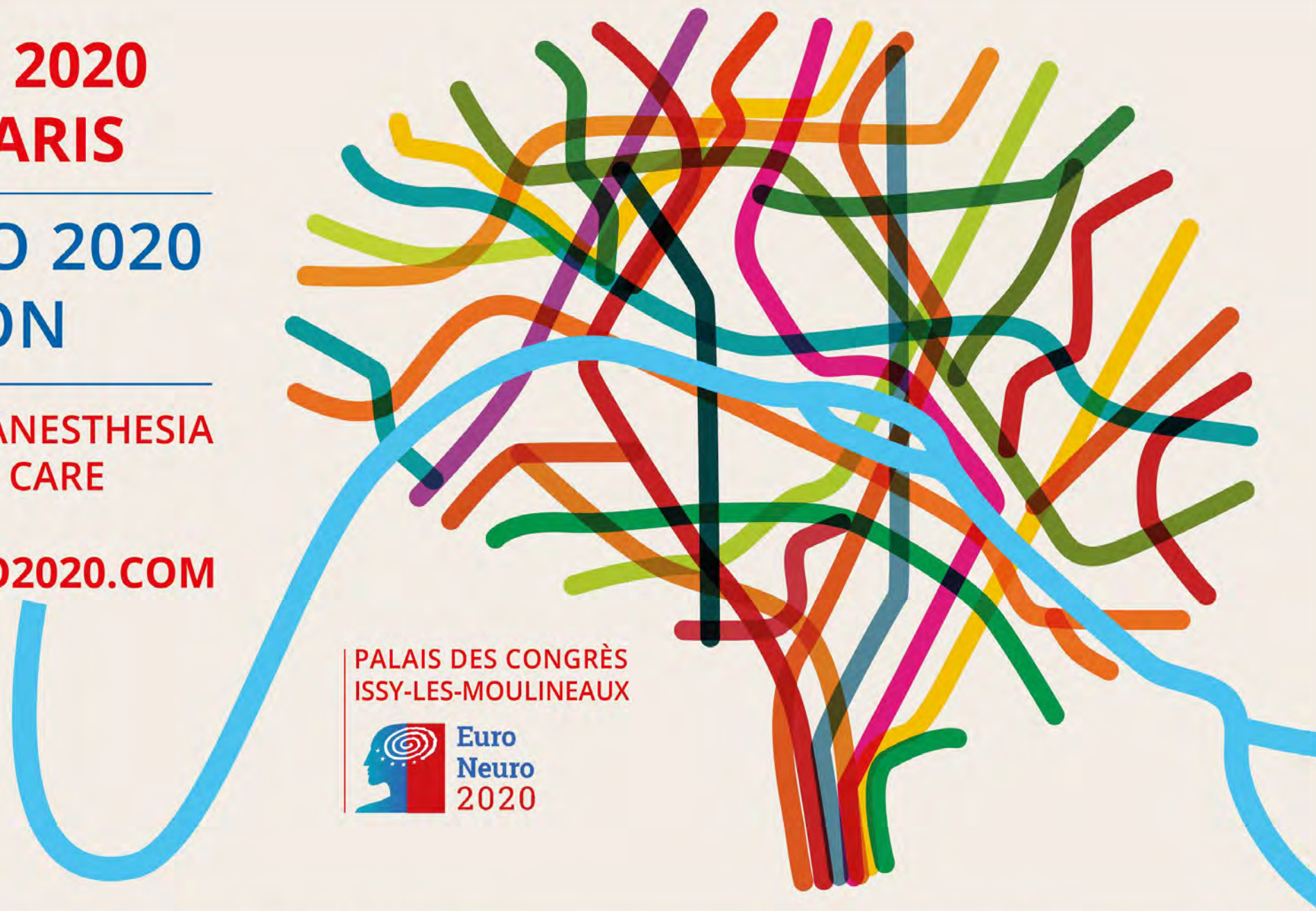
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Sédation versus anesthésie générale dans la prise en charge des thrombectomies pour accident vasculaire cérébral ischémique de la circulation antérieure

Etude multicentrique randomisée

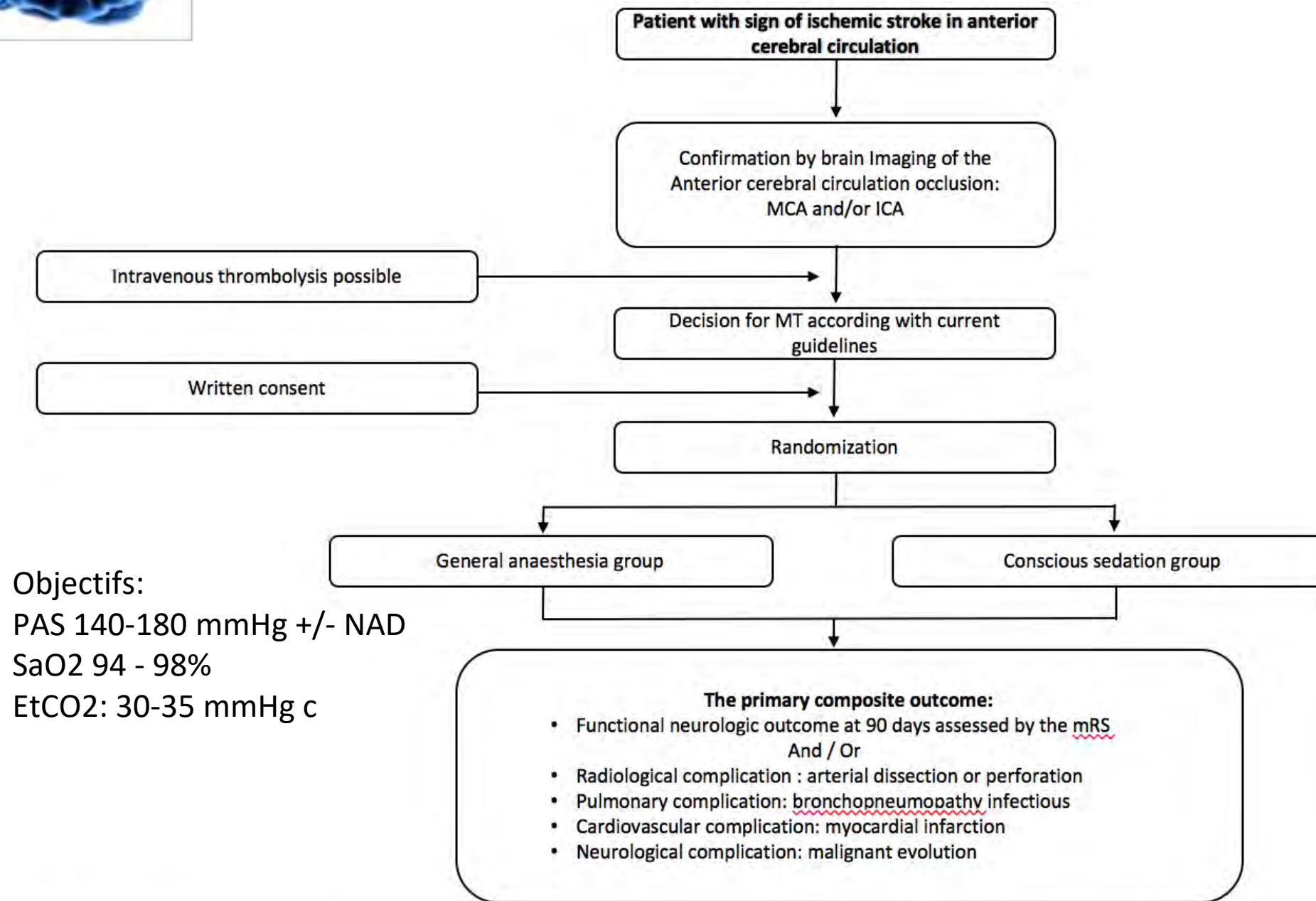


Figure 1: Flow chart of the study: ICA internal carotid artery, MCA middle cerebral artery, MT mechanical thrombectomy, mRS modified Ranking Scale.

Conscious sedation or local anesthesia during endovascular treatment for acute ischemic stroke

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Table 2 Effect of conscious sedation (CS) in patients undergoing intra-arterial treatment for acute ischemic stroke after propensity score adjustment

	CS (n = 60)	LA (n = 86)	Effect measure	Adjusted value ^a (95% CI)
Primary outcome				
mRS at 90 d, median (IQR)	4 (3–6)	3 (2–4)	acOR	0.4 (0.2 to 0.7)
Secondary outcomes, clinical, n (%)				
mRS ≤2 at 90 d	13 (22)	40 (47)	OR	0.4 (0.2 to 0.8)