UNIVERSITE ALASSANE OUATTARA

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Quelle prise en charge des AVC Hémorragiques aujourd'hui ?

Ange-Eric KOUAME-ASSOUAN
Maître de Conférences Agrégé
Neurologie Vasculaire

Introduction

- Monde : 2 M/an
- Afrique : 35-40% des AVC
- Mortalité >> AVC I
  - 50% à 12 mois
  - 1/3 décès à 30j <= Qualité de la prise en charge initiale
- Progrès de la prise en charge
  - Surtout AVCI ++ / AVC H ?

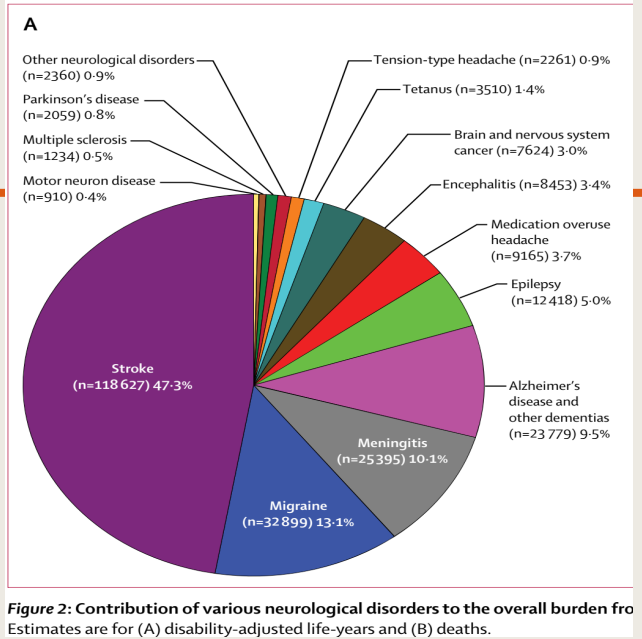


***Figure 2*: Contribution of various neurological disorders to the overall burden fro**
Estimates are for (A) disability-adjusted life-years and (B) deaths.

Questions

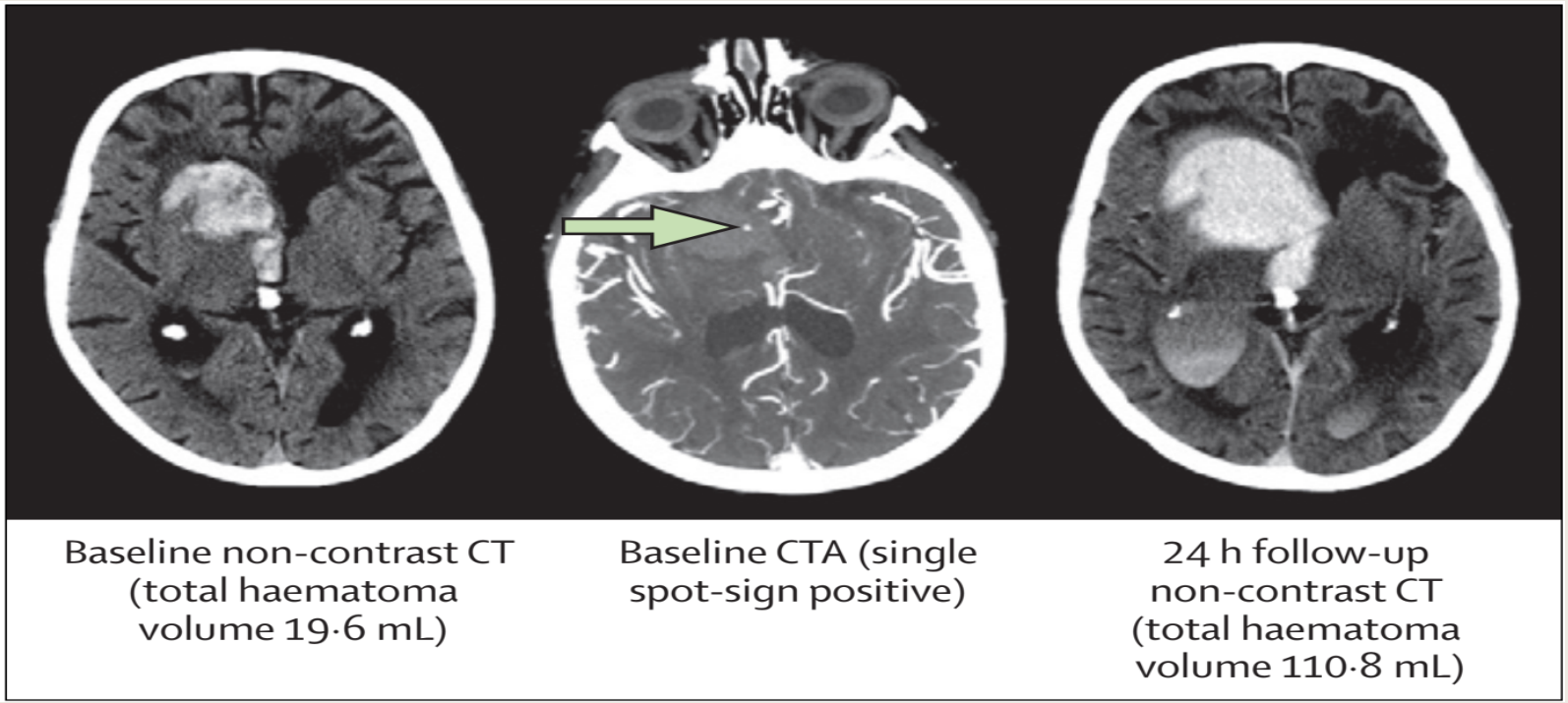
1. Evaluation initiale ?
2. Hospitalisation en USI (NV) ?
3. Pression artérielle à la phase aigue ?
4. Complications ?
5. AVCH liés aux anticoagulants ?
6. Indications chirurgicales ?

1 – EVALUATION INITIALE

Clinique ?

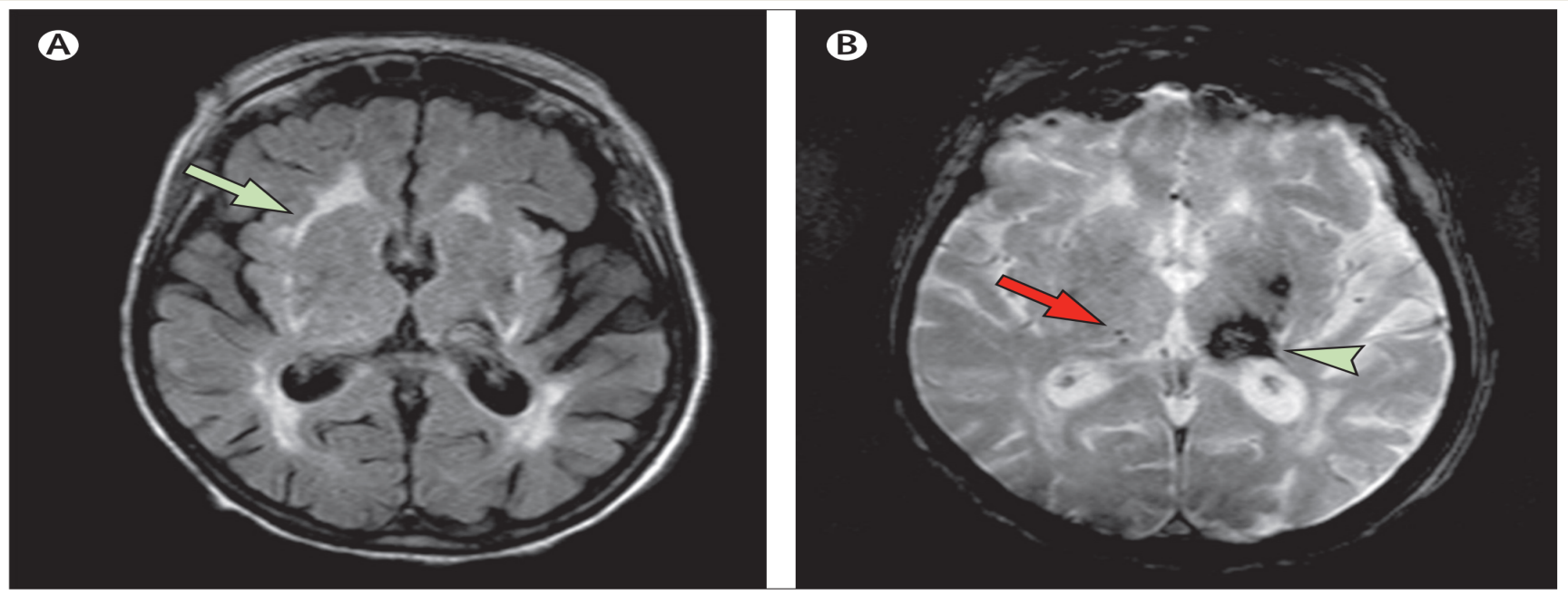
- Suggestifs d'Hémorragie cérébrale Vs ischémie
  - ***Aggravation rapide*** du déficit neurologique focal ***brutal***
  - Céphalées, Vomissements
  - Crises d'épilepsie
  - Troubles de la vigilance
  - Raideur méningée
- **Insuffisante =>** Urgence de l'imagerie !

Scanner cérébral



Demchuk et al. Prediction of haematoma growth and outcome in patients with intracerebral haemorrhage using the CT-angiography spot sign (PREDICT): a prospective observational study. Lancet Neurol 2012

IRM cérébrale



Cordonnier et al. Intracerebral haemorrhage: current approaches to acute management . Lancet 2018

Score pronostique

TABLE 3. Determination of the ICH Score

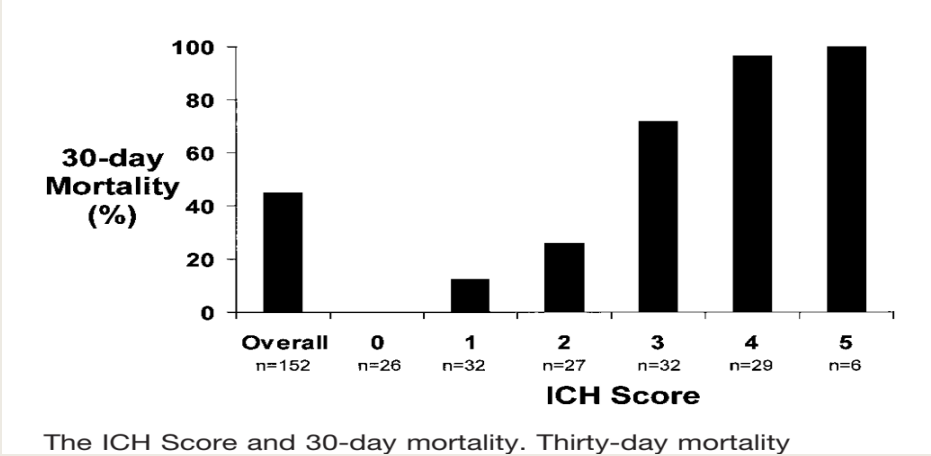
Component	ICH Score Points
GCS score	
3–4	2
5–12	1
13–15	0
ICH volume, cm^3	
≥30	1
<30	0
IVH	
Yes	1
No	0
Infratentorial origin of ICH	
Yes	1
No	0
Age, y	
≥80	1
<80	0
Total ICH Score	0–6

GCS score indicates GCS score on initial presentation (or after resuscitation);

The ICH Score

A Simple, Reliable Grading Scale for Intracerebral Hemorrhage

J. Claude Hemphill III, MD; David C. Bonovich, MD; Lavrentios Besmertis, MD; Geoffrey T. Manley, MD, PhD; S. Claiborne Johnston, MD, MPH



The ICH Score and 30-day mortality. Thirty-day mortality

2 – HOSPITALISATION

Stroke Unit Care Benefits Patients With Intracerebral Hemorrhage

Systematic Review and Meta-analysis

(*Stroke*. 2013;44:3044-3049.)

Peter Langhorne, PhD; Patricia Fearon, MBChB; Ole M. Ronning, MD; Markku Kaste, MD;

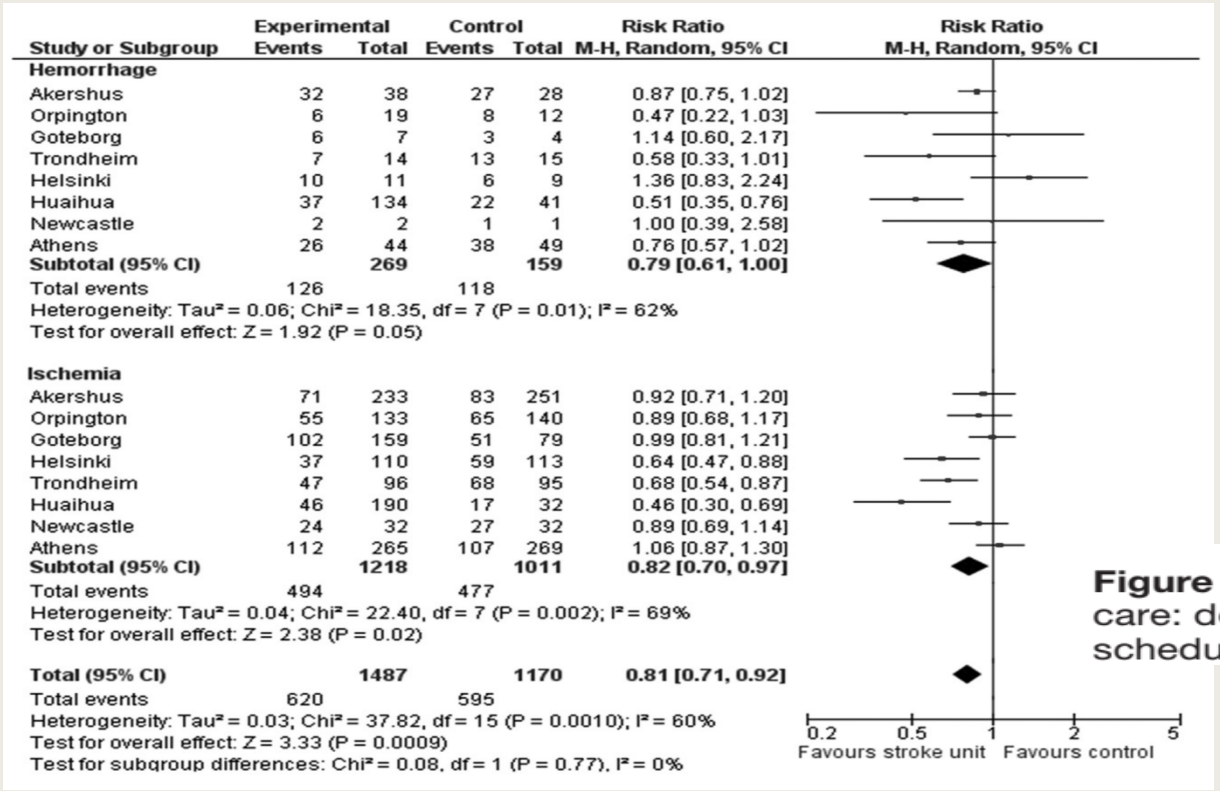


Figure 2. Stroke unit vs conventional care: death or dependency at the end of scheduled follow-up. The figure shows the

Réanimation

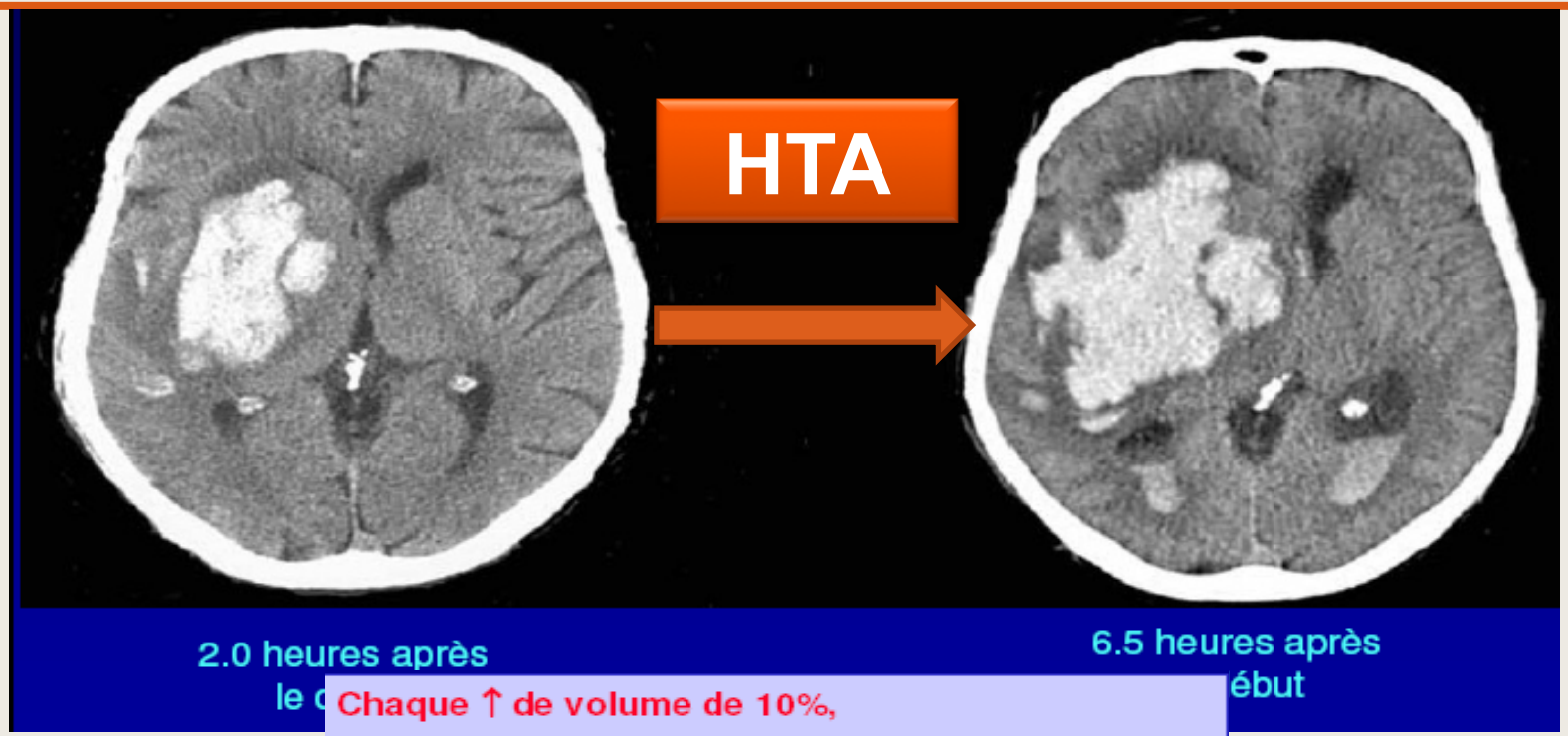
- Glasgow < 7
- Ventilation mécanique
- Chirurgie

3 – PRESSION ARTERIELLE

HTA et AVC H

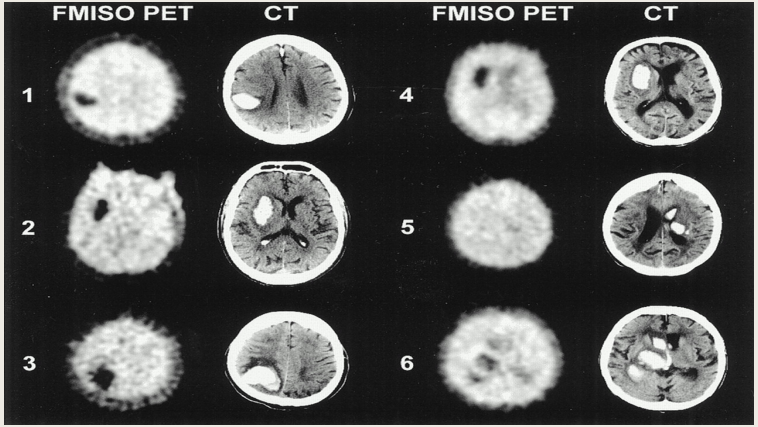
- HTA
  - 70% des AVC H associés à une HTA
- 2 notions importantes
  - La croissance de l'hématome
  - L'ischémie péri-hématique ?

Croissance de l'hématome



Ischémie péri-hématique ?

- Hypoperfusion péri lésionnelle
  - SPECT,MRI
- Mais pas d'ischémie évidente…
  - **18FMISO PET** – pas d'ischémie
    - *Hirano et al. Neurology. 1999*
  - Restriction ADC rare en **IRM de diffusion**
    - *Kidwell et al. Neurology. 2001, Schellinger Stroke. 2003, Butcher et al. Stroke. 2004*



The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JUNE 20, 2013 VOL. 368 NO. 25

Rapid Blood-Pressure Lowering in Patients with Acute Intracerebral Hemorrhage

Craig S. Anderson, M.D., Ph.D., Emma Heeley, Ph.D., Yining Huang, M.D., Jiguang Wang, M.D., Christian Stapf, M.D., Candice Delcourt, M.D., Richard Lindley, M.D., Thompson Robinson, M.D., Pablo Lavados, M.D., M.P.H., Bruce Neal, M.D., Ph.D., Jun Hata, M.D., Ph.D., Hisatomi Arima, M.D., Ph.D., Mark Parsons, M.D., Ph.D., Yuechun Li, M.D., Jinchao Wang, M.D., Stephane Heritier, Ph.D., Qiang Li, B.Sc., Mark Woodward, Ph.D., R. John Simes, M.D., [illegible] Stephen M. Davis, M.D., and John Chalmers, M.D., Ph.D., for the INTERACT2 Investigators*

ABSTRACT

BACKGROUND

Whether rapid lowering of elevated blood pressure would improve the outcome in patients with intracerebral hemorrhage is not known.

METHODS

We randomly assigned 2839 patients who had had a spontaneous intracerebral hemorrhage within the previous 6 hours and who had elevated systolic blood pressure to receive intensive treatment to lower their blood pressure (with a target systolic level of <140 mm Hg within 1 hour) or guideline-recommended treatment (with a target systolic level of <180 mm Hg) with the use of agents of the physician's choosing. The primary outcome was death or major disability, which was defined as a score of 3 to 6 on the modified Rankin scale (in which a score of 0 indicates no symptoms, a score of 5 indicates severe disability, and a score of 6 indicates death) at 90 days. A prespecified ordinal analysis of the modified Rankin score was also performed. The rate of serious adverse events was compared between the two groups.

RESULTS

Among the 2794 participants for whom the primary outcome could be determined, 719 of 1382 participants (52.0%) receiving intensive treatment, as compared with 785 of 1412 (55.6%) receiving guideline-recommended treatment, had a primary outcome event (odds ratio with intensive treatment, 0.87; 95% confidence interval [CI], 0.75 to 1.01; P=0.06). The ordinal analysis showed significantly lower modified Rankin scores with intensive treatment (odds ratio for greater disability, 0.87; 95% CI, 0.77 to 1.00; P=0.04). Mortality was 11.9% in the group receiving intensive treatment and 12.0% in the group receiving guideline-recommended treatment. Nonfatal serious adverse events occurred in 23.3% and 23.6% of the patients in the

CONCLUSIONS

In patients with intracerebral hemorrhage, intensive lowering of blood pressure did not result in a significant reduction in the rate of the primary outcome of death or severe disability. An ordinal analysis of modified Rankin scores indicated improved functional outcomes with intensive lowering of blood pressure. (Funded by the National Health and Medical Research Council of Australia; INTERACT2 ClinicalTrials.gov number, NCT00716079.)

The authors' affiliations are listed in the Appendix. Address reprint requests to Dr. Anderson at the George Institute for Global Health, Royal Prince Alfred Hospital and the University of Sydney, P.O. Box M201, Missenden Rd., Sydney NSW 2050, Australia, or at canderson@georgeinstitute.org.au.

*Investigators in the second Intensive Blood Pressure Reduction in Acute Cerebral Hemorrhage Trial (INTERACT2) are listed in the Supplementary Appendix, available at NEJM.org.

This article was published on May 29, 2013, at NEJM.org.

N Engl J Med 2013;368:2355-65.
DOI: 10.1056/NEJMoa1214609

Systolic Blood Pressure After Intravenous Antihypertensive Treatment and Clinical Outcomes in Hyperacute Intracerebral Hemorrhage

The Stroke Acute Management With Urgent Risk-Factor Assessment and Improvement-Intracerebral Hemorrhage Study

Yuki Sakamoto, MD; Masatoshi Koga, MD; Hiroshi Yamagami, MD; Satoshi Okuda, MD; Yasushi Okada, MD; Kazumi Kimura, MD; Yoshiaki Shiokawa, MD; Jyoji Nakagawara, MD; Eisuke Furui, MD; Yasuhiro Hasegawa, MD; Kazuomi Kario, MD; Shoji Arihiro, MD; Shoichiro Sato, MD; Junpei Kobayashi, MD; Eijirou Tanaka, MD; Kazuyuki Nagatsuka, MD; Kazuo Minematsu, MD; Kazunori Toyoda, MD; for the SAMURAI Study Investigators

Background and Purpose—Blood pressure (BP) lowering is often conducted as part of general acute management in patients with acute intracerebral hemorrhage. However, the relationship between BP after antihypertensive therapy and clinical outcomes is not fully known.

Methods—Hyperacute (<3 hours from onset) intracerebral hemorrhage patients with initial systolic BP (SBP) >180 mm Hg were included. All patients received intravenous antihypertensive treatment, based on predefined protocol to lower and maintain SBP between 120 and 160 mm Hg. BPs were measured every 15 minutes during the initial 2 hours and every 60 minutes in the next 22 hours (a total of 30 measurements). The mean achieved SBP was defined as the mean of 30 SBPs, and associations between the mean achieved SBP and neurological deterioration (≥2 points' decrease in Glasgow Coma Score or ≥4 points' increase in National Institutes of Health Stroke Scale score), hematoma expansion (>33% increase), and unfavorable outcome (modified Rankin Scale score 4–6 at 3 months) were assessed with multivariate logistic regression analyses.

Results—Of the 211 patients (81 women, median age 65 [interquartile range, 58–74] years, and median initial National Institutes of Health Stroke Scale score 13 [8–17]) enrolled, 17 (8%) showed neurological deterioration, 36 (17%) showed hematoma expansion, and 87 (41%) had an unfavorable outcome. On multivariate regression analyses, mean achieved SBP was independently associated with neurological deterioration (odds ratio, 4.45; 95% confidence interval, 2.03–9.74 per 10 mm Hg increment), hematoma expansion (1.86; 1.09–3.16), and unfavorable outcome (2.03; 1.24–3.33) after

Conclusions—High achieved SBP after standardized antihypertensive therapy in hyperacute intracerebral hemorrhage was independently associated with poor clinical outcomes. Aggressive antihypertensive treatment may ameliorate clinical outcomes. (***Stroke*. 2013;44:1846-1851.**)

Société Française Neuro-Vasculaire

PRESSION ARTERIELLE A LA PHASE AIGUË DES HEMORRAGIES INTRA-CEREBRALES

PRECONISATIONS POUR SA GESTION

- « Les patients ayant une hémorragie cérébrale spontanée de moins de 6 h, et une PAS de 150 à 220 mmHg, peuvent bénéficier d'une baisse rapide de la PAS, avec une PA cible < 140 mmHg en moins de 60 min. Cette baisse est réalisable, bien tolérée et probablement efficace sur le pronostic fonctionnel ».
- « Cette baisse doit être précoce, et la réduction du niveau de PA (<140mmHg) obtenue dans l'heure suivant la mise en place du traitement et maintenue durant au moins une semaine ».

Stroke
JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart Association | American Stroke Association

Stroke. published online May 28, 2015;

Guidelines for the Management of Spontaneous Intracerebral Hemorrhage: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association

J. Claude Hemphill III, Steven M. Greenberg, Craig S. Anderson, Kyra Becker, Bernard R.

BP: Recommendations

1. **For ICH patients presenting with SBP between 150 and 220 mm Hg and without contraindication to acute BP treatment, acute lowering of SBP to 140 mm Hg is safe *(Class I; Level of Evidence A)* and can be effective for improving functional outcome *(Class IIa; Level of Evidence B)*.** (Revised from the previous guideline)
2. **For ICH patients presenting with SBP >220 mm Hg, it may be reasonable to consider aggressive reduction of BP with a continuous intravenous infusion and frequent BP monitoring *(Class IIb; Level of Evidence C)*.** (New recommendation)

4 – LES COMPLICATIONS

Œdème cérébral

- Monitoring de la PIC si :
  - Coma, Engagement transtentoriel, Hydrocéphalie ou Inondation ventriculaire massive
- Aucun traitement efficace !

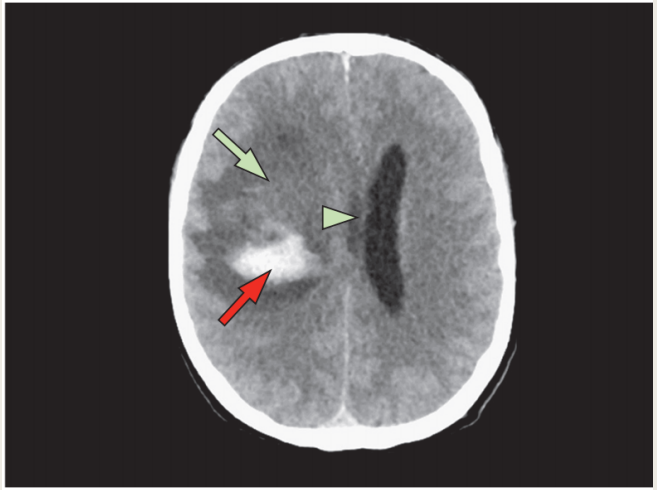


Figure 2: Non-contrast CT scan, axial slice, 8 days after intracerebral haemorrhage.

Corticosteroids for aneurysmal subarachnoid haemorrhage and primary intracerebral haemorrhage (Review)

Feigin VL, Anderson N, Rinkel GJE, Algra A, van Gijn J, Bennett DA

Cochrane Library

Authors' conclusions

Overall, there is no evidence of a beneficial or adverse effect of corticosteroids in patients with either SAH or PICH.

Treatment of Acute Cerebral Hemorrhage With Intravenous Glycerol

A Double-Blind, Placebo-Controlled, Randomized Trial

Y.L. Yu, FRCPE; C.R. Kumana, FRCP; I.J. Lauder, PhD; Y.K. Cheung, FRCR; F.L. Chan, FRCR; M. Kou, HV; C.M. Chang, MRCP (UK); R.T.F. Cheung, MRCP (UK); and K.Y. Fong, MRCP (UK)

: In the absence of any clinically or statistically significant difference in outcome between the treated and control groups, this trial provides no justification for glycerol therapy following acute cerebral hemorrhage. (*Stroke* 1992;23:967–971)

Mannitol for acute stroke (Review)

Cochrane Library

Bereczki D, Liu M, Fernandes do Prado G, Fekete I

Authors' conclusions

There is currently not enough evidence to support the routine use of mannitol in acute stroke patients.

Medical management of intracerebral haemorrhage

Floris H B M Schreuder,[1] Shoichiro Sato,[2,3] Catharina J M Klijn,[1,4] Craig S Anderson[3,5,6,7]

comings.[6,3] Other approaches to decrease ICP (ie, hypertonic saline, neuromuscular blockage, forced hyperventilation, therapeutic hypothermia and barbiturate coma) have not been studied systematically. The effect of surgical treatment, including

. *J Neurol Neurosurg Psychiatry* 2017;

Mannitol and Outcome in Intracerebral Hemorrhage

Propensity Score and Multivariable Intensive Blood Pressure Reduction in Acute Cerebral Hemorrhage Trial 2 Results

Stroke. 2015;46:2762-2767.

Xia Wang, MMed; Hisatomi Arima, MD, PhD; Jie Yang, MD, PhD; Shihong Zhang, MD;

Conclusions—Mannitol seems safe but might not improve outcome in patients with acute intracerebral hemorrhage.

Œdème cérébral

- Monitoring de la PIC si :
  - Coma, Engagement transtentoriel, Hydrocéphalie ou Inondation ventriculaire massive
- Aucun traitement efficace
  - Corticoïdes, Mannitol, Glycérol
  - Hyperventilation…
- Hémicraniectomie décompresive ?
  - Essai SWITCH en cours…

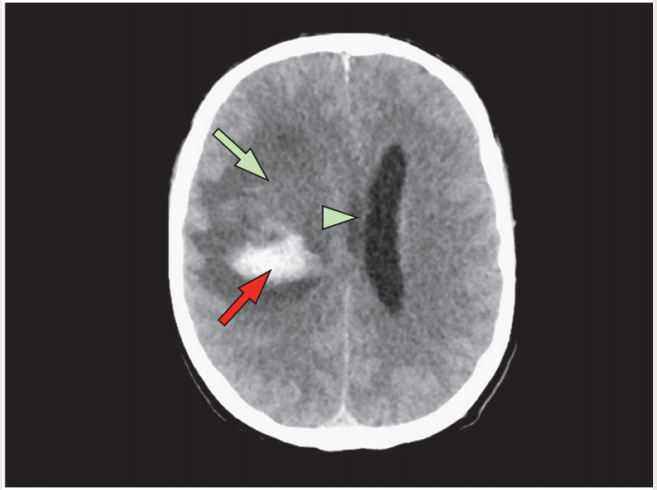


Figure 2: Non-contrast CT scan, axial slice, 8 days after intracerebral haemorrhage.

Autres complications

Crises d'épilepsie

- 5-10%
- Pas d'effet sur le pronostic
- Pas de prophylaxie
- Crises précoces < 7j
  - => Traitement 3 à 6 mois
- Crises tardives
  - => Idem toute épilepsie

TVP/EP

- Mobilisation précoce prudente
- Compression pneumatique intermittente
- HBPM après 24 à 48 H
- Bas de contention inefficaces

5 – AVC H LIES AUX ANTICOAGULANTS

AVC H et anticoagulants

- 15% des AVC H dans les pays occidentaux
- Utilisation croissante des AC au long cours
- Associés à un plus mauvais pronostic
  - Hématomes plus volumineux
  - Croissance plus importante des hématomes
- => Antagoniser les AC
  - PPSB ou PFC + Vitamine K1 si AVK
  - Idarucizumab (dabigatran) et andexanet-alpha (anti-Xa)

Hemphill et al. Guidelines for the management of spontaneous intracerebral hemorrhage: a guideline for healthcare professionals from the AHA/ASA. Stroke 2015; 46: 2032–60

6 – INDICATIONS CHIRURGICALES

1. Evacuation de l'hématome

- *Consensuel* pour l'hématome cérébelleux compressif chez un patient qui se dégrade

SPONTANEOUS CEREBELLAR HEMORRHAGE: CLINICAL REMARKS ON 50 CASES

M. Salvati, M.D., L. Cervoni, M.D.,* A. Raco, M.D.,† and R. Delfini, M.D.

METHODS

During the 8-year period 1990 through 1997 a series of 50 consecutive patients with spontaneous cerebellar hemorrhage were admitted to the Emergency Neurosurgery Unit, University of Rome "La Sapienza" (Italy). On admis-

CONCLUSION

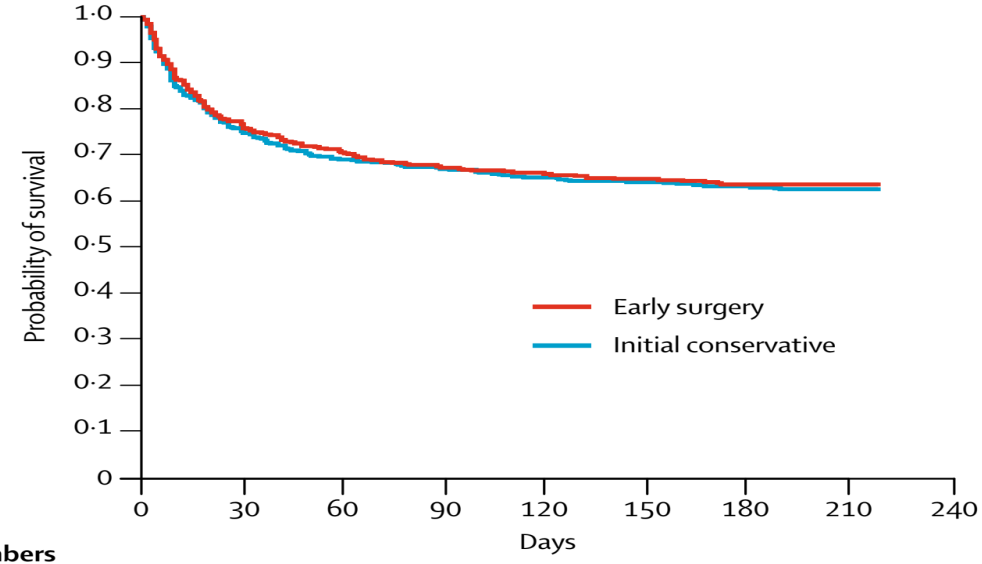
In patients presenting with spontaneous cerebellar hemorrhage the essential criteria indicating surgery are a hematoma 40 mm × 30 mm on CT imaging in the cerebellar hemisphere or 35 mm × 25 mm on CT imaging in the vermis, the presence of a tight posterior fossa (critical size reduced by 10 mm), and a Glasgow Coma Score less than 13.

Quid des hématomes sustentoriels ?

Early surgery v
patients with s
haematomas ir
Intracerebral H

A David Mendelow, Barbara A Gregs
M Donald M Shaw, and David H Bar

Lancet 2005; 365: 387–97
See Comment page 361

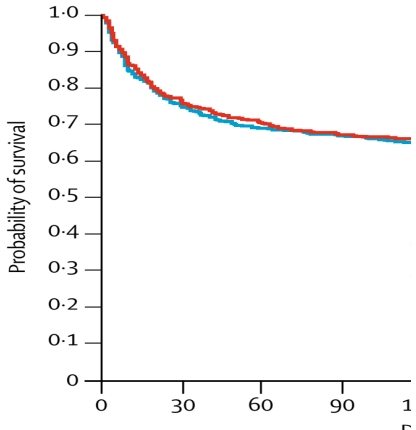


Numbers at risk (alive)									
Early surgery	477	366	337	321	314	309	304	304	304
Initial conservative	505	380	349	339	329	324	319	316	316

Figure 2: **Kaplan-Meier survival curves**

Early surgery vers patients with spo haematomas in t Intracerebral Hae

A David Mendelow, Barbara A Gregson, H
M Donald M Shaw, and David H Barer for



Numbers at risk (alive)

Early surgery	477	366	337	321	3
Initial conservative	505	380	349	339	3

Figure 2: Kaplan-Meier survival curves

Study or subcategory	Early surgery n/N	Initial conservative treatment n/N	Odds ratio (fixed) 95% CI	Odds ratio (fixed) 95% CI
Age				
<65	182/262	204/284		0·89 (0·62–1·29)
⩾65	164/206	174/212		0·85 (0·52–1·39)
GCS				
5–8	80/88	83/99		1·93 (0·78–4·75)
9–12	140/187	158/196		0·72 (0·44–1·16)
13–15	126/193	137/201		0·88 (0·58–1·34)
Side of haematoma				
Left hemisphere	186/246	208/265		0·85 (0·56–1·28)
Right hemisphere	160/222	170/231		0·93 (0·61–1·40)
Site of haematoma				
Lobar	107/181	130/194		0·71 (0·47–1·08)
Basal ganglia/thalamus	236/284	247/300		1·05 (0·69–1·62)
Haematoma volume				
⩽50 mL	211/302	238/323		0·83 (0·58–1·17)
>50 mL	135/166	140/173		1·03 (0·60–1·77)
Depth from cortical surface				
⩽1 cm	170/257	192/260		0·69 (0·47–1·01)
>1 cm	174/208	184/234		1·39 (0·86–2·25)
Intended method of evacuation				
Craniotomy	238/324	267/337		0·73 (0·51–1·04)
Others	108/144	111/159		1·30 (0·78–2·15)
Deficit of affected arm				
Normal/weak	110/182	135/206		0·80 (0·53–1·21)
Paralysed	231/279	238/284		0·93 (0·60–1·45)
Deficit of affected leg				
Normal/weak	150/229	169/248		0·89 (0·61–1·30)
Paralysed	192/232	201/239		0·91 (0·56–1·48)
Deficit of speech				
Normal	72/124	92/136		0·66 (0·40–1·10)
Dysphasia/aphasia	216/276	228/289		0·96 (0·64–1·44)
Not assessable	58/68	58/71		1·30 (0·53–3·20)
Any thrombolytic or anticoagulant treatment				
Anticoagulant treatment	24/34	38/46		0·51 (0·17–1·46)
No anticoagulant	322/434	340/450		0·93 (0·69–1·26)

Figure 3: **Prespecified subgroup analysis**
n=number of unfavourable outcomes using prognosis-based outcome. N=number randomised in group. GCS=Glasgow coma score.

Quid des hématomes sus-tentoriels ?

Early surgery versus initial conservative treatment in patients with spontaneous supratentorial lobar intracerebral haematomas (STICH II): a randomised trial

Published online May 29, 2013

A David Mendelow, Barbara A Gregson, Elise N Rowan, Gordon D Murray, Anil Gholkar, Patrick M Mitchell, for the STICH II Investigators

Findings 307 of 601 patients were randomly assigned to early surgery and 294 to initial conservative treatment; 298 and 291 were followed up at 6 months, respectively; and 297 and 286 were included in the analysis, respectively. 174 (59%) of 297 patients in the early surgery group had an unfavourable outcome versus 178 (62%) of 286 patients in the initial conservative treatment group (absolute difference 3·7% [95% CI −4·3 to 11·6], odds ratio 0·86 [0·62 to 1·20]; p=0·367).

Interpretation The STICH II results confirm that early surgery does not increase the rate of death or disability at 6 months and might have a small but clinically relevant survival advantage for patients with spontaneous superficial intracerebral haemorrhage without intraventricular haemorrhage.

2. Dérivation ventriculaire externe

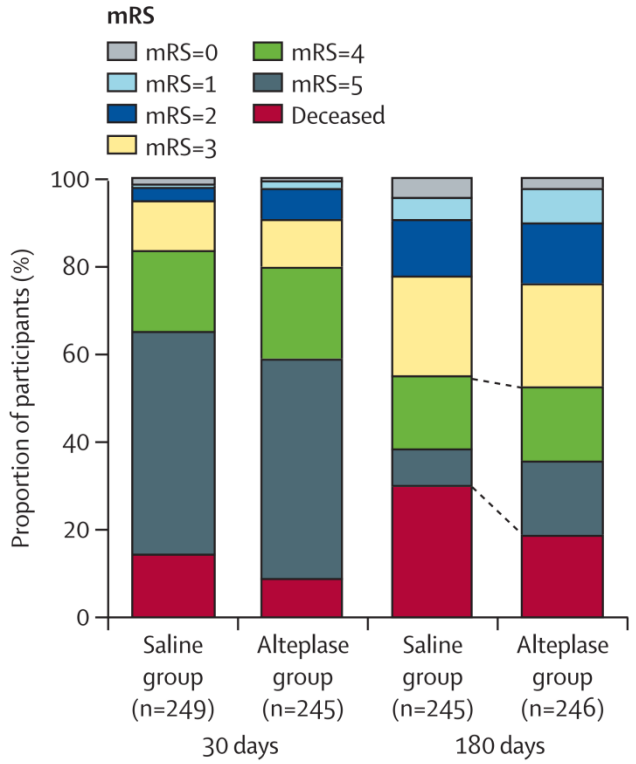
- Inondation ventriculaire = facteur de mauvais pronostic
  - Inflammation méningée et hydrocéphalie
- DVE
  - Améliore la survie chez un patient qui se détériore (vigilance)
  - Pas de bénéfice sur le pronostic fonctionnel
  - Peut être : drainage plus important et association rtpa ?

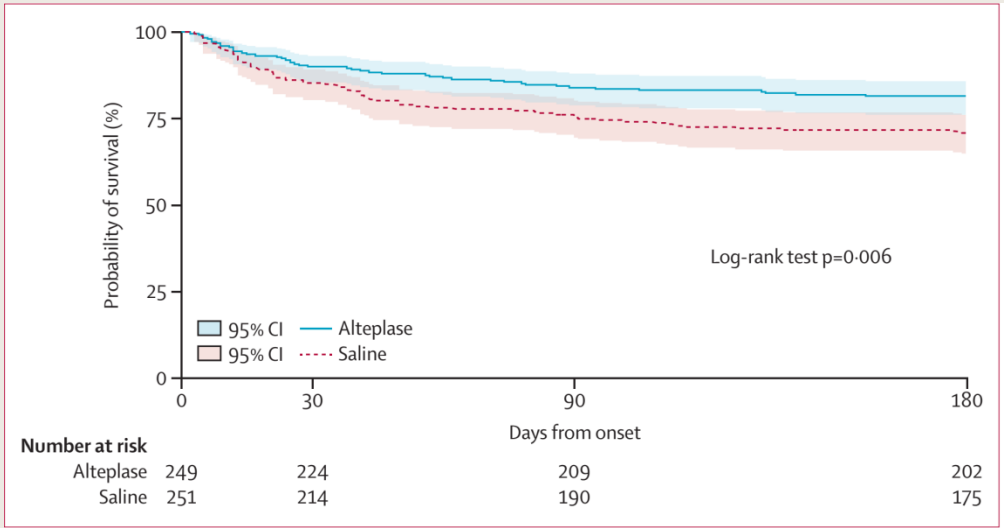
Thrombolytic removal of intraventricular haemorrhage in treatment of severe stroke: results of the randomised, multicentre, multiregion, placebo-controlled CLEAR III trial

Daniel F Hanley*, Karen Lane*, Nichol McBee*, Wendy Ziai*, Stanley Tuhrim, Kennedy R Lees*, Jesse Dawson, Dheeraj Gandhi, Natalie Ullman*, on, Kenneth Butcher, Paul Vespa*, David W Wright*, Carlos S Kase*, schelli, Joshua F Betz, Carol B Thompson*, Elizabeth A Sugar, Gayane Yenokyan, ich, Mark R Harrigan, Safdar Ansari, Jack Jallo, Jean-Louis Caron, David LeDoux, , Richard E Thompson, Issam A Awad*, for the CLEAR III Investigators

of intracerebral haemorrhage, with 50% mortality and serious

Lancet 2017; 389: 603–11





3. Chirurgie mini invasive

- Insertion scanno-guidée d'un cathéter pour aspirer l'hématome
- Chirurgie endoscopique ou stéréotaxique

Stroke
Journal of the American Heart Association

Stroke. 2012;43:2923-2930;

American Heart Association | American Stroke Association

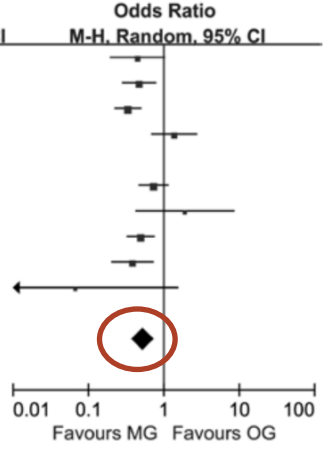
Minimally Invasive Surgery for Spontaneous Supratentorial Intracerebral Hemorrhage: A Meta-Analysis of Randomized Controlled Trials

Xinyu Zhou, Jianjun Chen, Qi Li, Gaoping Ren, Guoen Yao, Ming Liu, Qiang Dong, Jing Guo, Leilei Li, Jing Guo and Peng Xie

A

Study or Subgroup	MG Events	MG Total	OG Events	OG Total	Weight	Odds Ratio M-H, Random, 95% CI
Auer 1989	28	50	37	50	9.2%	0.45 [0.19, 1.04]
Hattori 2004	60	121	82	121	14.3%	0.47 [0.28, 0.79]
Kim 2009	67	204	109	183	16.4%	0.33 [0.22, 0.50]
Mendelow 2005	51	69	58	86	11.2%	1.37 [0.68, 2.76]
Miller 2008	6	6	4	4		Not estimable
Sun 2010	90	159	93	145	15.4%	0.73 [0.46, 1.16]
Teernstra 2003	33	36	29	34	4.1%	1.90 [0.42, 8.64]
Wang 2009	56	195	82	182	16.1%	0.49 [0.32, 0.75]
Zhou 2011	24	90	38	78	12.1%	0.38 [0.20, 0.73]
Zuccarello 1999	0	4	7	11	1.1%	0.07 [0.00, 1.55]
Total (95% CI)		**934**		**894**	**100.0%**	**0.54 [0.39, 0.76]**
Total events	415		539			

Heterogeneity: Tau² = 0.14; Chi² = 19.48, df = 8 (P = 0.01); I² = 59%
Test for overall effect: Z = 3.55 (P = 0.0004)



Safety and efficacy of minimally invasive surgery plus alteplase in intracerebral haemorrhage evacuation (MISTIE): a randomised, controlled, open-label, phase 2 trial

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	Day 180*		Day 365†	
	Standard care (n=42)	MIS plus alteplase (n=54)	Standard care (n=31)	MIS plus alteplase (n=25)
mRS score of 0	0	0	0	1 (4%)
mRS score of 1	0	1 (2%)	1 (3%)	3 (12%)
mRS score of 2	4 (10%)	6 (11%)	2 (6%)	2 (8%)
mRS score of 3	5 (12%)	11 (20%)	3 (10%)	2 (8%)
mRS score of 4	12 (29%)	13 (24%)	6 (19%)	3 (12%)
mRS score of 5	6 (14%)	7 (13%)	3 (10%)	2 (8%)
mRS score of 6	11 (26%)	14 (26%)	11 (35%)	10 (40%)
mRS score missing	4 (10%)	2 (4%)	5 (16%)	2 (8%)

Table 3: **Functional outcomes**

	Study stop threshold	Standard care (n=42)	MIS plus alteplase (n=54)	p value
Died within 0–7 days	10%	0 (0% [0–8·4])	1 (1·9% [0·1–9·9])	0·562
Died within 0–30 days	70%	4 (9·5% [2·7–22·6])	8 (14·8% [6·6–27·1])	0·542
Bacterial brain infection 0–30 days*	15%	1 (2·4% [0·1–12·6])	0 (0% [0–6·6])	0·438
Symptomatic bleed 72 h after last dose†	35%	1 (2·4% [0·1–12·6])	5 (9·3% [3·1–20·3])	0·226
Asymptomatic bleed 72 h after last dose‡	NA	3 (7·1% [1·5–19·5])	12 (22·2% [12–35·6])	0·051
Symptomatic or asymptomatic bleed 72 h after last dose§	NA	4 (9·5% [2·7–22·6])	15 (27·8% [16·4–41·6])	0·038

Table 2: **Safety outcomes**

CONCLUSION

Aujourd'hui, l'AVC H, c'est

- USI (NV)
- Score ICH
- **Baisser rapidement et durablement la PA**
- Antagoniser les anticoagulants si nécessaire
- Assez peu de chirurgie
- Surtout **le traitement symptomatique**

MERCI