



Prise en charge des hématomes intracrâniens

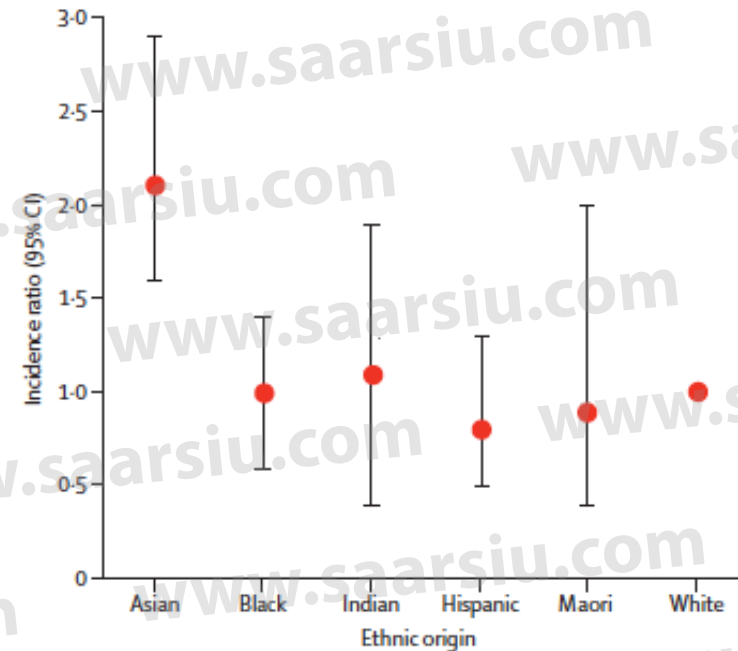
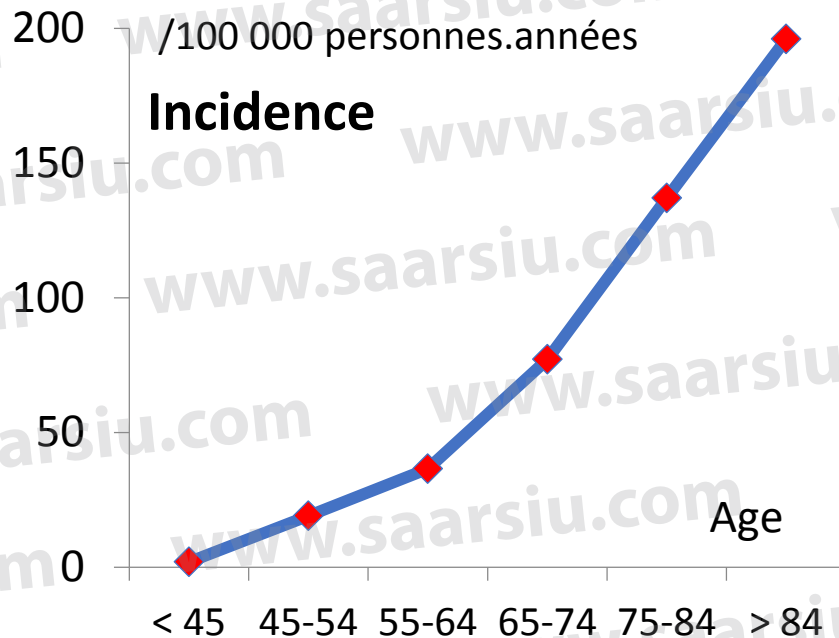
Lionel VELLY
(Marseille)



Accident vasculaire cérébral hémorragique

24.6 / 100 000 personnes-années

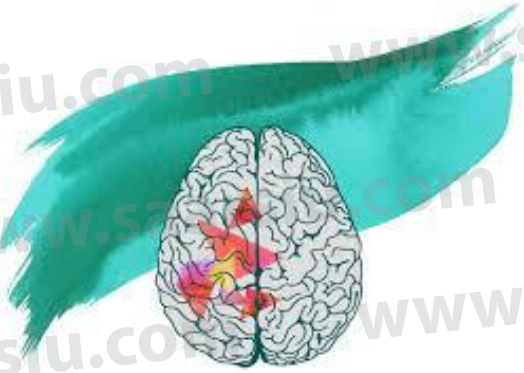
➤ pas de modification entre 1980 et 2008



C van Asch et al. Lancet Neurol 2010

Accident vasculaire cérébral hémorragique

Incidence



80% de chez les patients > 75 ans

50% chez patients < 60 ans

Accident vasculaire cérébral hémorragique

Mortalité



40 %

Dont 50 % dans les 48 premières heures

Ferro JM. J Neurol, 2006

Accident vasculaire cérébral hémorragique



Accident vasculaire cérébral hémorragique

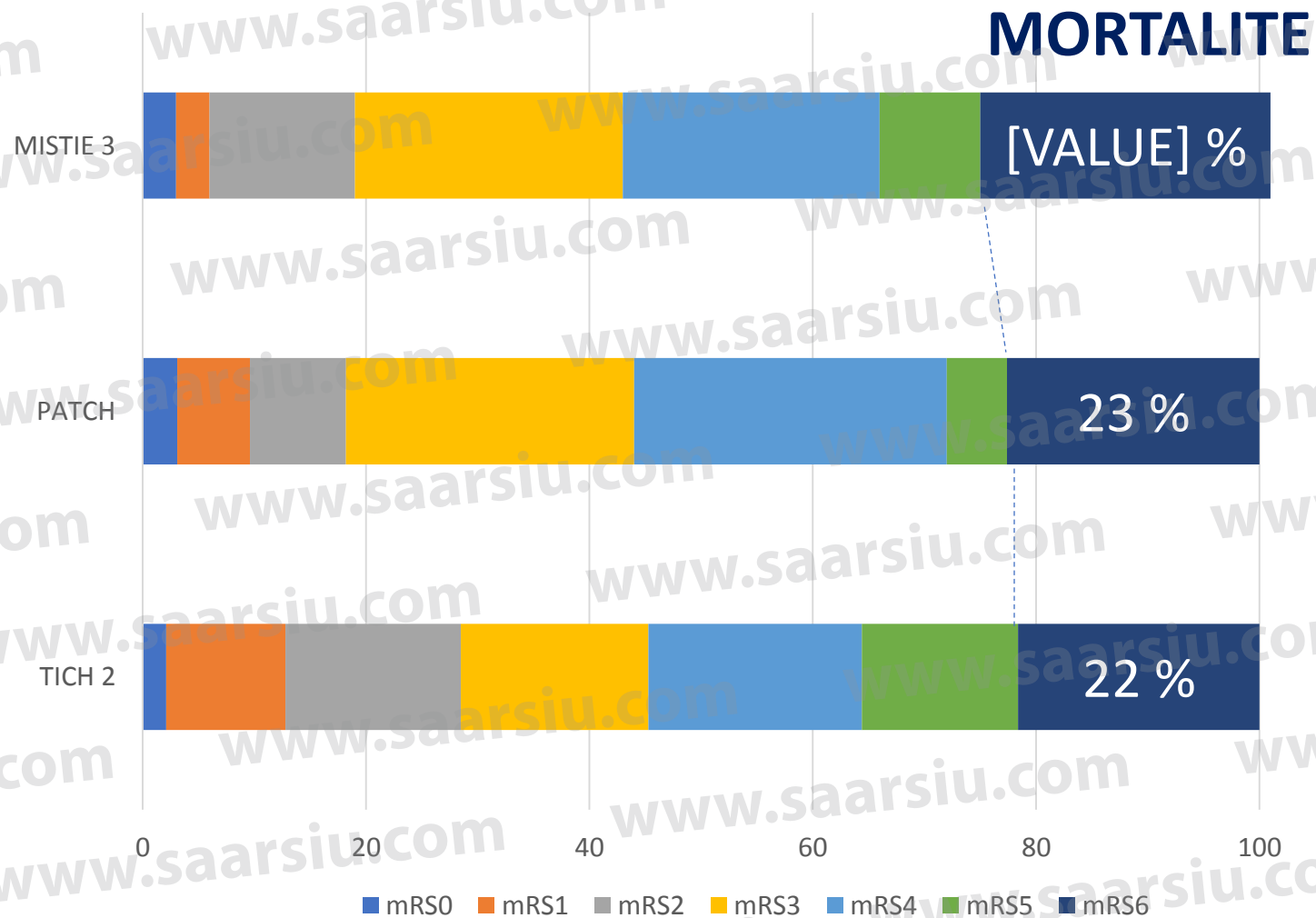
Autonomie



50 %

Fogelholm et al. J Neurol Neurosurg Psychiatry, 2005

Accident vasculaire cérébral hémorragique



Accident vasculaire cérébral hémorragique



43%

PATCH



44 %

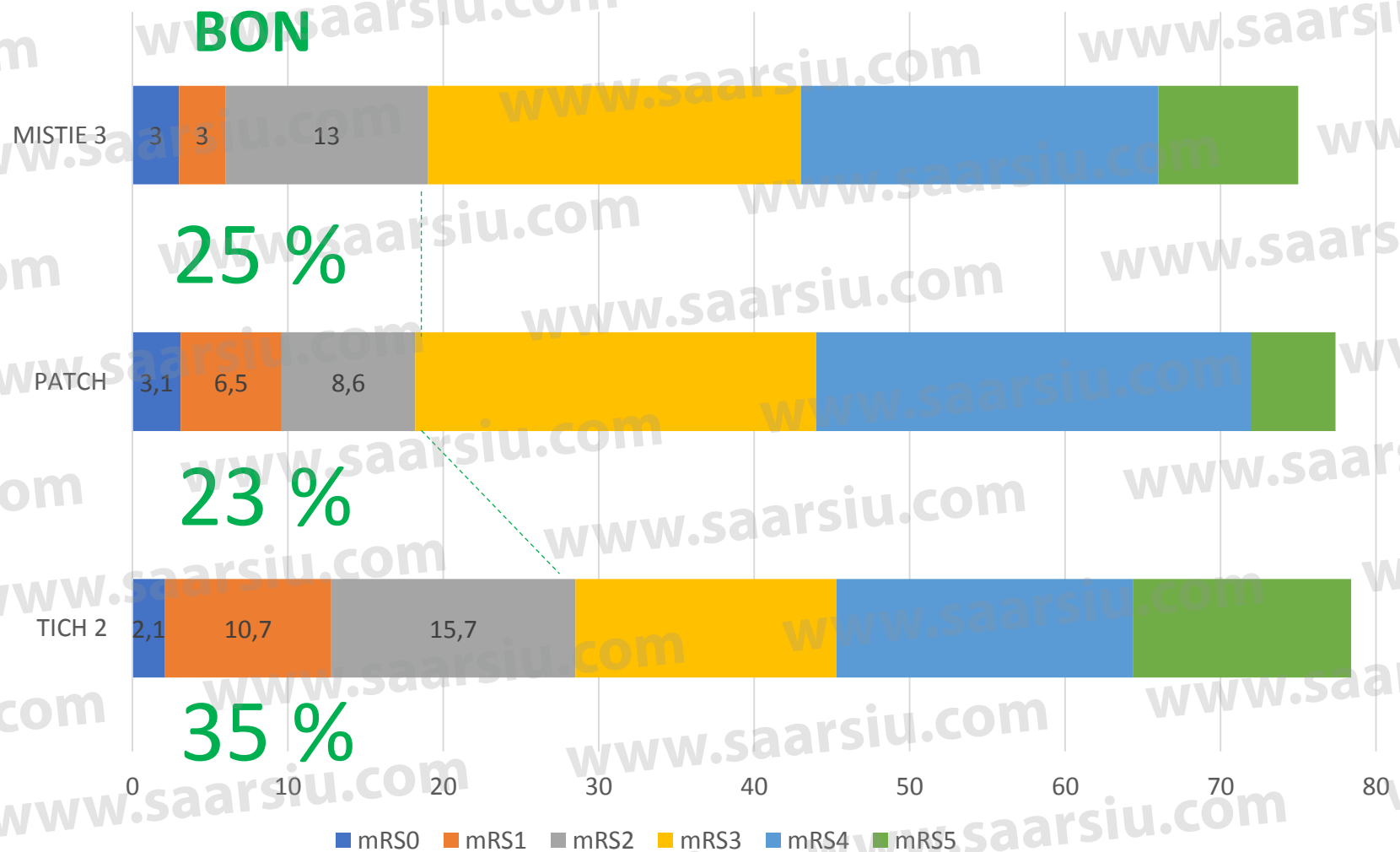
TICH 2



42 %

mRS0 mRS1 mRS2 mRS3 mRS4 mRS5

Accident vasculaire cérébral hémorragique



HIC localisation de l'hématome

80%

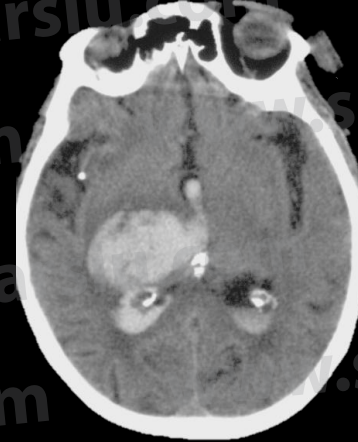
Lobaires



Putaminales



Thalamiques



20%

Cérébelleux



Pontiques



HIC localisation de l'hématome

80%

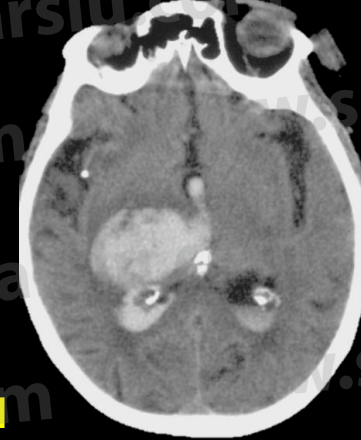
Lobaires



Putaminales



Thalamiques



Mauvais
pronostic
fonctionnel

20%

Cérébelleux



Pontiques



HIC localisation de l'hématome

Mortalité 16 %

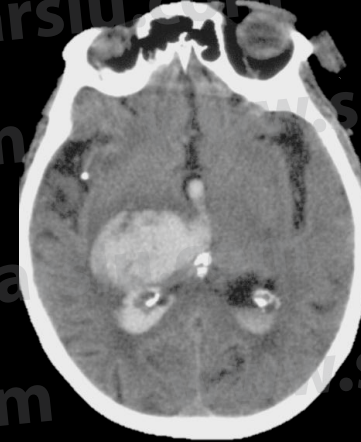
Lobaires



Putaminales



Thalamiques



Cérébelleux

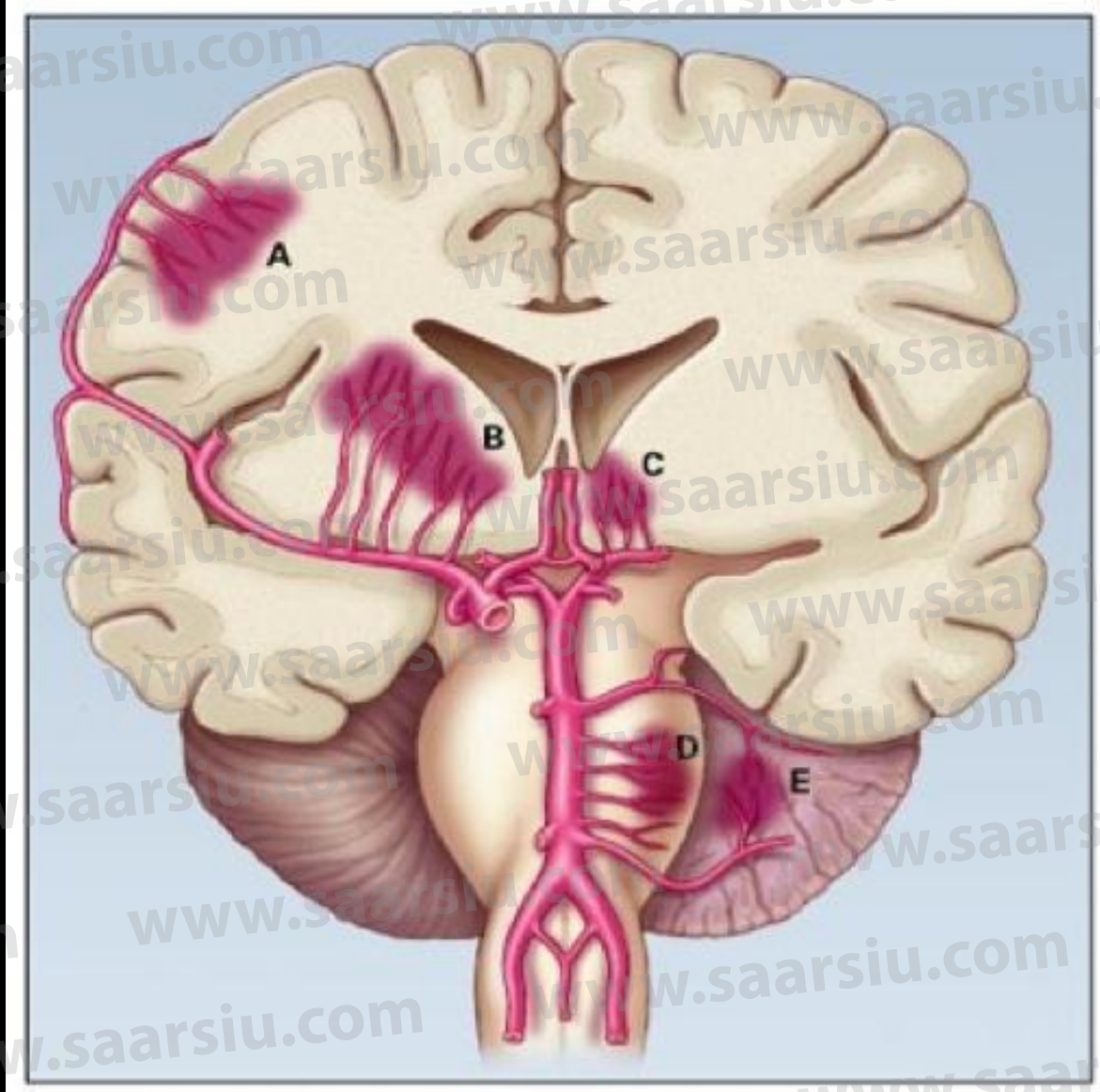


Pontiques



Mortalité 45 %

HIC localisation de l'hématome



CT without injection

Spontaneous HYPERDENSITY

5 Questions:

With or Without SAH ?



CT without injection

Spontaneous HYPERDENSITY

5 Questions:

With or Without SAH ?



CT without injection

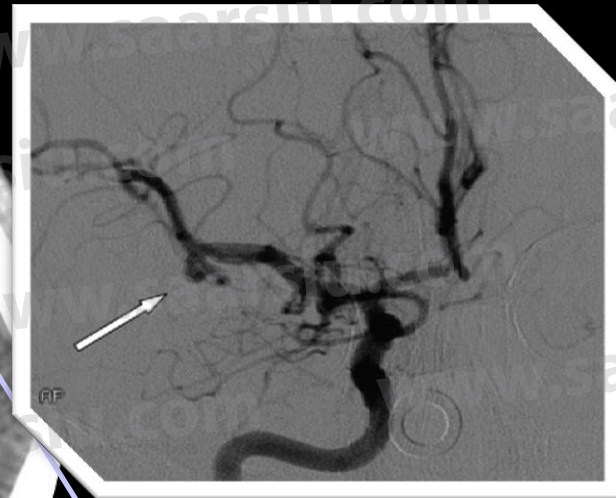
Spontaneous HYPERDENSITY

5 Questions:

With or Without SAH ?



Hematoma



SAH

SCANNER Sans Injection

HYPERDENSITE spontanée

2 Questions:

With or Without SAH ?

Localisation ?

Typical

Nontypical

Capsulo-lenticulaire



Capsulo-Thalamo-Lenticulaire



SCANNER Sans Injection

HYPERDENSITE spontanée

2 Questions:

With or Without SAH ?

Localisation ?



SCANNER Sans Injection

HYPERDENSITE spontanée

2 Questions:

With or Without SAH ?

Localisation ?



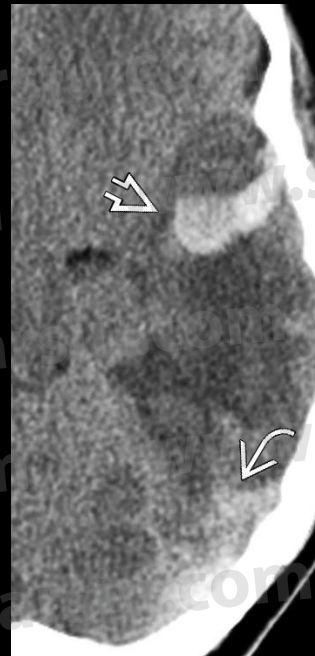
SCANNER Sans Injection

HYPERDENSITE spontanée

2 Questions:

With or Without SAH ?

Localisation ?



Thrombosis Labbé vein

MAV temporoparietooccipital

artère PCA / veine sinus transverse



Women 59 ans

HTA

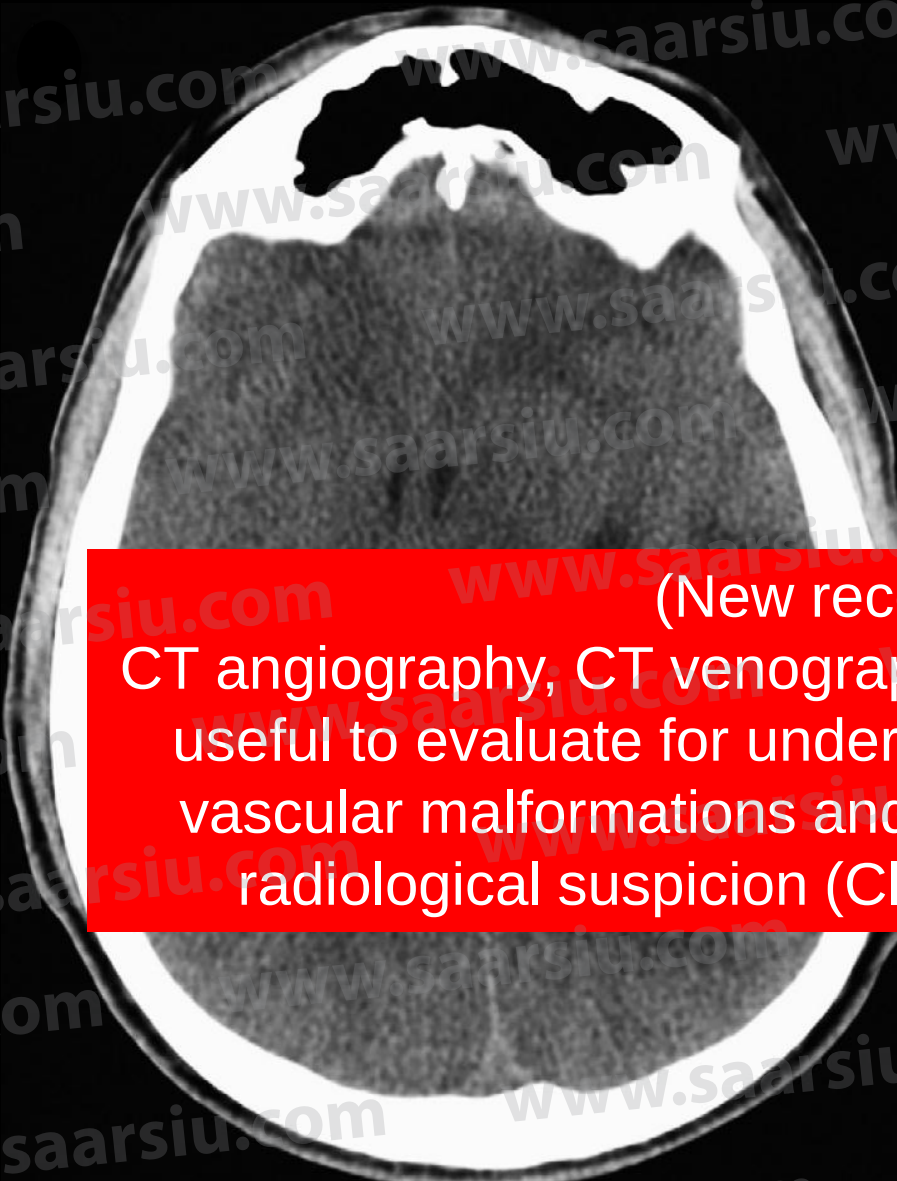
Aspirin

hemiplegia



Women 59 ans
HTA
Aspirin
hemiplegia

Pseudoaneurysm in drug addict



Man 28 ans

No HTA

No anticoagulation

(New recommendation)

CT angiography, CT venography, contrast-enhanced CT, can be useful to evaluate for underlying structural lesions, including vascular malformations and tumors when there is clinical or radiological suspicion (Class IIa; Level of Evidence: B).

M-CTA

ANGIO-CT +/-ARTERIO

Secondary causes: 14-28%

Study	N	Age (years)	ICH localisation	Secondary %
Gazzola et al ^{18,a}	96	16-86	All	25.0
Romero et al ^{15,b}	43	4-40	All	65.1
Yoon et al ^{16,a}	78	21-86	Lobar	28.2
Delgado Almandoz et al ^{17,b}	623	18-94	All	14.6
Delgado Almandoz et al ^{19,b}	222	18-94	All	13.1

Angio -CT : Se 96% Sp 100%

Study	N	Sensitivity	Specificity	Accuracy
Yeung et al ¹⁴	55	89	92	91
Romero et al ^{15,a}	43	96	100	98
Yoon et al ¹⁶	78	96	100	99
Delgado Almandoz et al ^{17,a}	210	96	98	98



Anévrismes mycotiques



Thrombophlébite



MAV

ICH

Questions:

Without SAH?

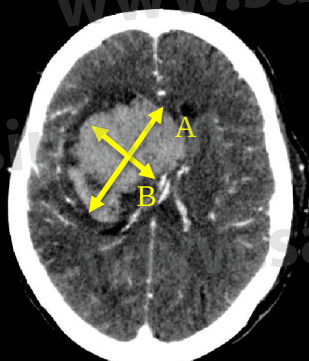
Localisation

Risk of aggravation?

Volume?

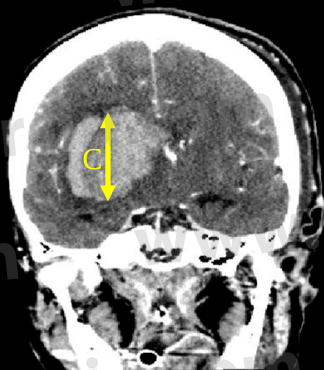
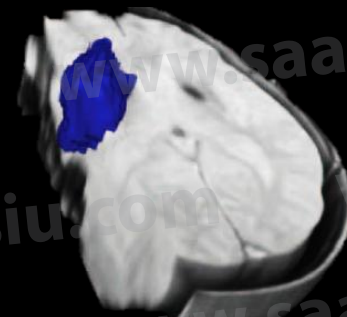
EXPANSION HEMORRAGIQUE

VOLUME HINT



Sélectionnez la coupe où l'hématome est le plus grand

$$\frac{A \times B \times C}{2}$$



A = le plus long axe (cm)

B = perpendiculaire au grand axe A (cm)



nombre de coupes
x l'épaisseur des
coupes (cm)

SCANNER Sans Injection

HYPERDENSITE spontanée

5 Questions:

Without SAH ?

Localisation ?

Risk of aggravation ?

Volume ?

Intraventricular Haemorrhage / hydrocephaly



EXTENSION VENTRICULAIRE

Initial

after 24 h



30-40 % patients (HINT thalamic or pontin ++)

Independent factor of bad outcome

And mortality (43% vs 9%)

DVE +++ intraventricular thrombolysis ??

OBJECTIFS DU TRAITEMENT

Arrêter le
saignement

Pronostic et Hématome Intracrânien

40% des patients



1/3 volume in the 3 hours

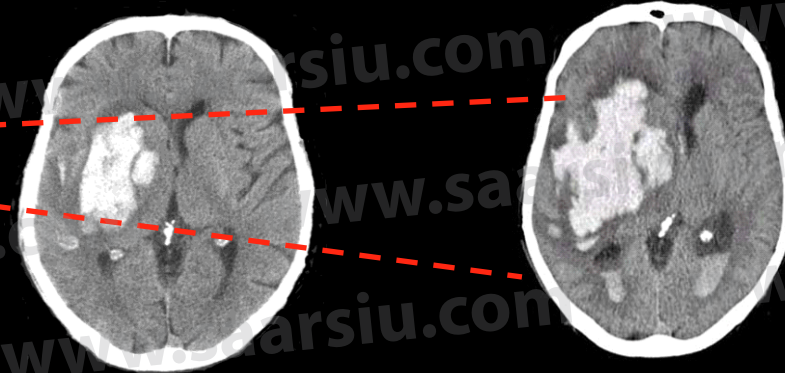
HR de la mortalité : 5% par 10% du volume de l'HIC

Window = 3-4 h

H 0

H 2

H 7

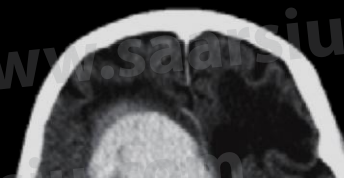


Expansion de l'hématome

SPOT SIGN

Initial

after 24 h



(New recommendation)

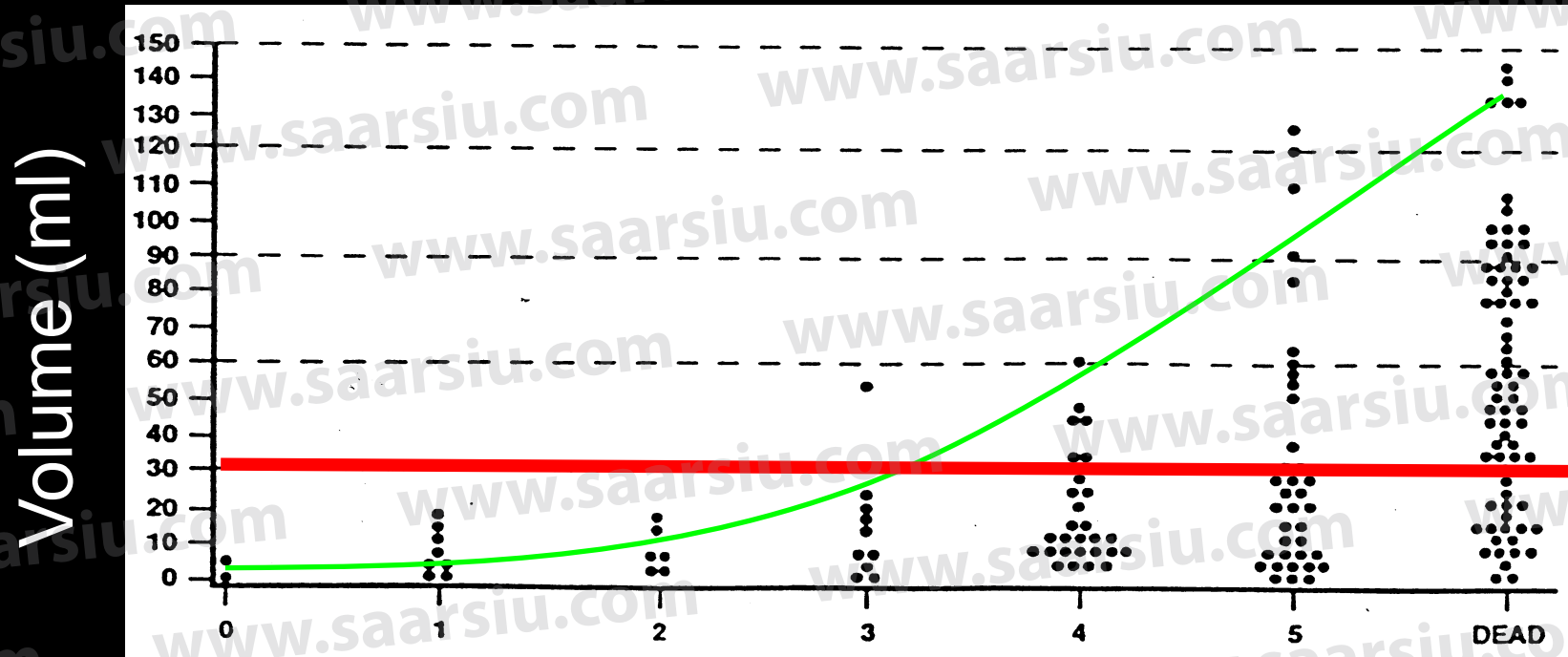
CT angiography and contrast-enhanced CT may be considered to help identify patients at risk for hematoma expansion (Class IIb; Level of Evidence: B)

Volume 20 ml

Volume 110 ml

Taille de l'hématome et pronostic

Volume > 30 mL = Mauvais Pronostic



Broderick JP et al. Stroke 1993

Rankin

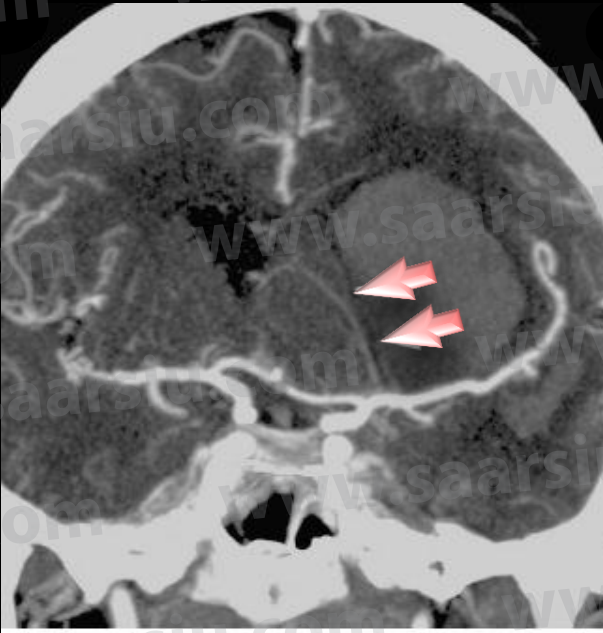
Mortalité

EXPANSION HEMORRAGIQUE

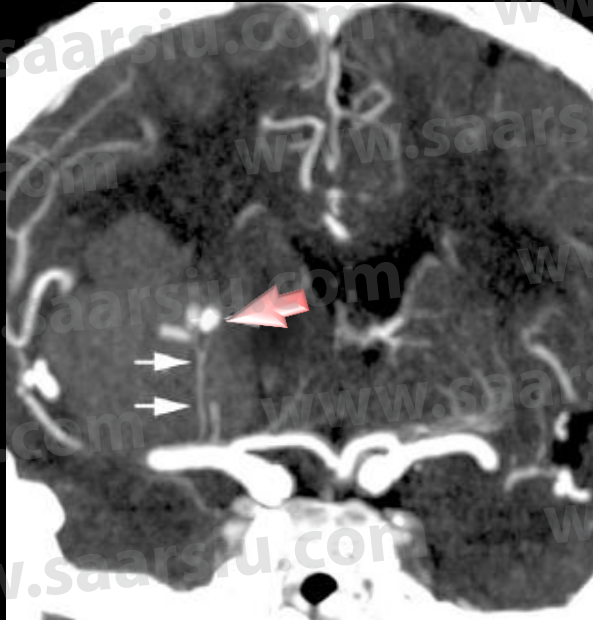
SPOT SIGN

Etude coronale +++

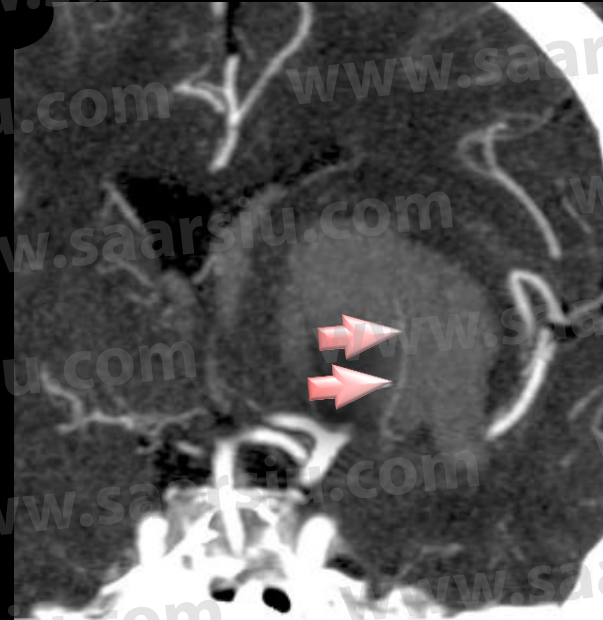
Normale
(artère refoulée)



Spot Sign (21%)
Artère au centre de l'hématome



PAS de Spot Sign
Artère au centre de l'hématome (15%)



SIGNE DE LA QUEUE
Equivalent extravasation

Score de risque d'expansion

Original Investigation

Predicting Hematoma Expansion After Primary Intracerebral Hemorrhage

H. Bart Brouwers, MD; Yuchiao Chang, PhD; Guido J. Falcone, MD, MPH; Xuemei Cai, MD; Alison M. Ayres, BA; Thomas W. K. Battey, BS; Anastasia Vashkevich, BA; Kristen A. McNamara, BA; Valerie Valant, BA; Kristin Schwab, BA; Susannah C. Orzell, MPH; Linda M. Bresette, RN; Steven K. Feske, MD; Natalia S. Rost, MD, MPH; Javier M. Romero, MD; Anand Viswanathan, MD, PhD; Sherry H.-Y. Chou, MD, MSc; Steven M. Greenberg, MD, PhD; Jonathan Rosand, MD, MSc; Joshua N. Goldstein, MD, PhD



$$\text{Volume} = A \times B \times C / 2$$

Table 3. Individual Components of the Prediction Score for Hematoma Expansion

Variable	Points
Warfarin sodium use	
No	0
Yes	2
Time to initial CT, h	
≤6	2
>6	0
Baseline ICH volume, mL	
<30	0
30-60	1
>60	2
CT angiography spot sign	
Absent	0
Present	3
Unavailable	1
Total	0-9

Abbreviations: CT, computed tomography; ICH, intracerebral hemorrhage.

EXPANSION HEMORRAGIQUE

Prediction of haematoma growth and outcome in patients with intracerebral haemorrhage using the CT-angiography spot sign (PREDICT): a prospective observational study

Andrew M Demchuk, Dar Dowlathshahi, David Rodriguez-Luna, Carlos A Molina, Yolanda Silva Blas, Imanuel Dzialowski, Adam Kobayashi, Jean-Martin Boulanger, Cheemun Lum, Gord Gubitz, Vasantha Padma, Jayanta Roy, Carlos S Kase, Jayme Kosior, Rohit Bhatia, Sarah Tymchuk, Suresh Subramaniam, David J Gladstone, Michael D Hill, Richard I Aviv, for the PREDICT/Sunnybrook ICH CTA study group

Lancet Neurol 2012;

268 patients

HIC <6h et <100mL

CJP : +6mL OU +33%

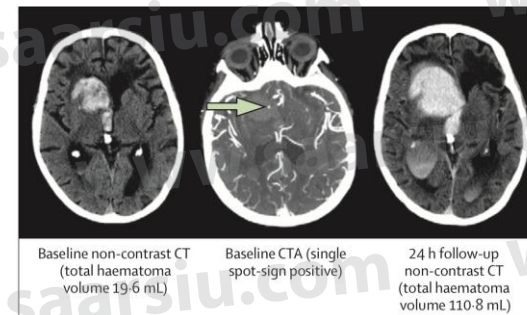


Figure 1: A sign with spot-like appearance on CTA in a patient with intracerebral haemorrhage

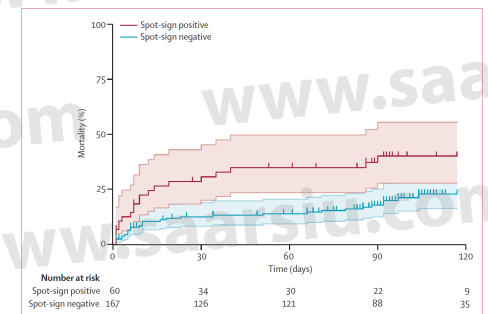


Figure 2: Risk of death by CTA spot-sign status. Log-rank test $p=0.0006$. Shaded areas represent 95% confidence intervals.

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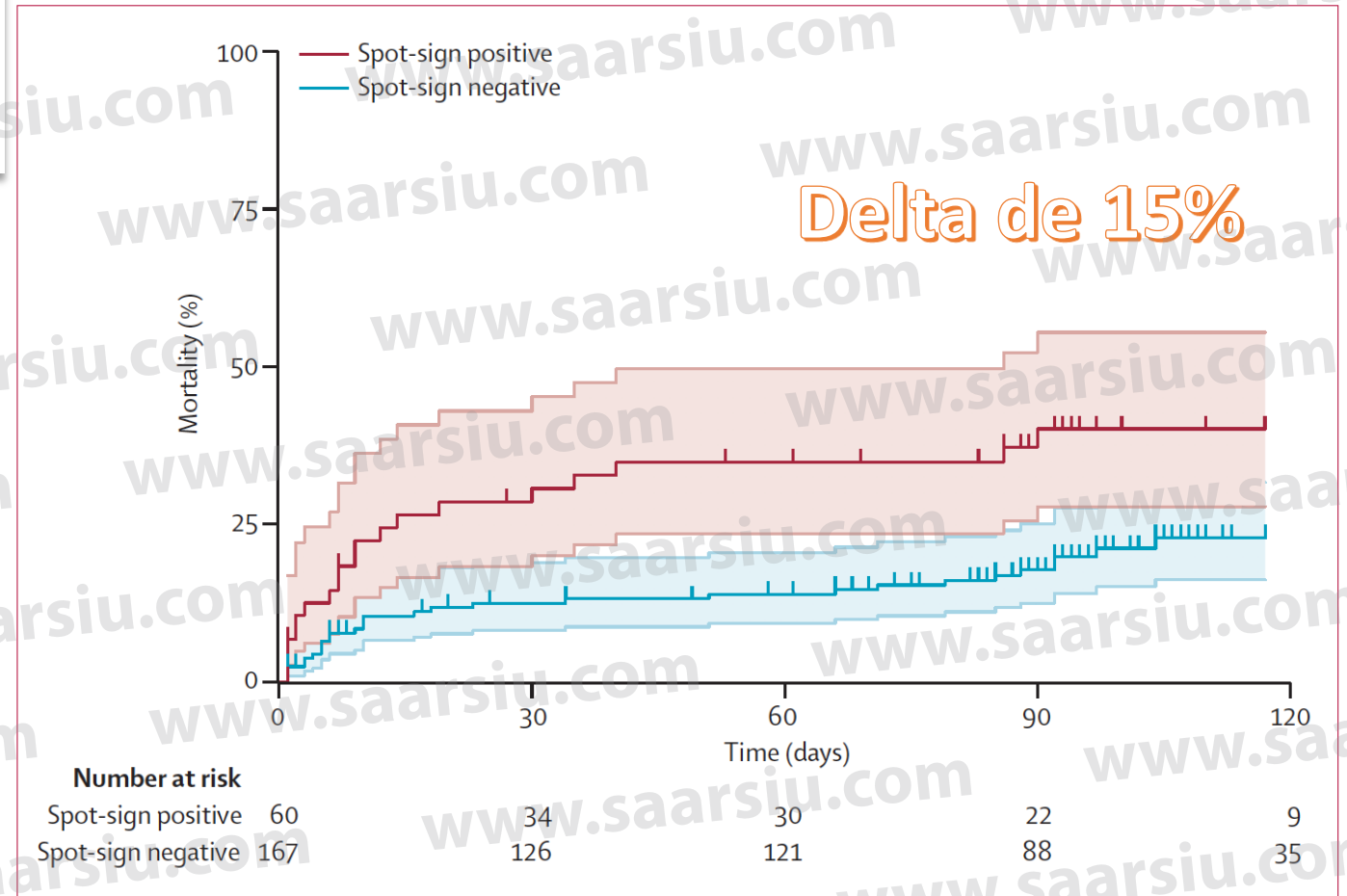


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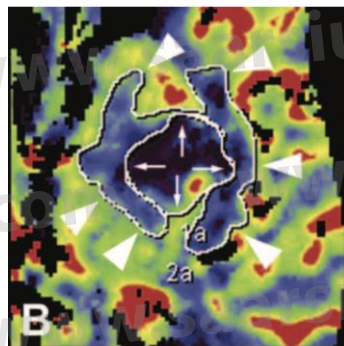


OBJECTIFS DU TRAITEMENT

Contrôle
tensionnel

Arrêter le
saignement

CONTRÔLE DE L'HTA



Etude INTERACT



Etude ATACH



Schellinger et al. Stroke 2003



Herwew et al. Stroke 2007



**Intérêt d'un contrôle rapide
et agressif de l'HTA ?**

Intensive blood pressure reduction in acute cerebral haemorrhage trial (INTERACT): a randomised pilot trial

Craig S Anderson, Yining Huang, Ji Guang Wang, Hisatomi Arima, Bruce Neal, Bin Peng, Emma Heeley, Christian Skulina, Mark W Parsons, Jong Sung Kim, Qing Ling Tao, Yue Chun Li, Jian Dong Jiang, Li Wen Tai, Jin Li Zhang, En Xu, Yan Cheng, Stephane Heritier, Lewis B Morgenstern, John Chalmers, for the INTERACT Investigators*

Lancet Neurol 2008; 7: 391-99

Intensive: target systolic = 140 mm Hg $n=203$

Guidelines: target

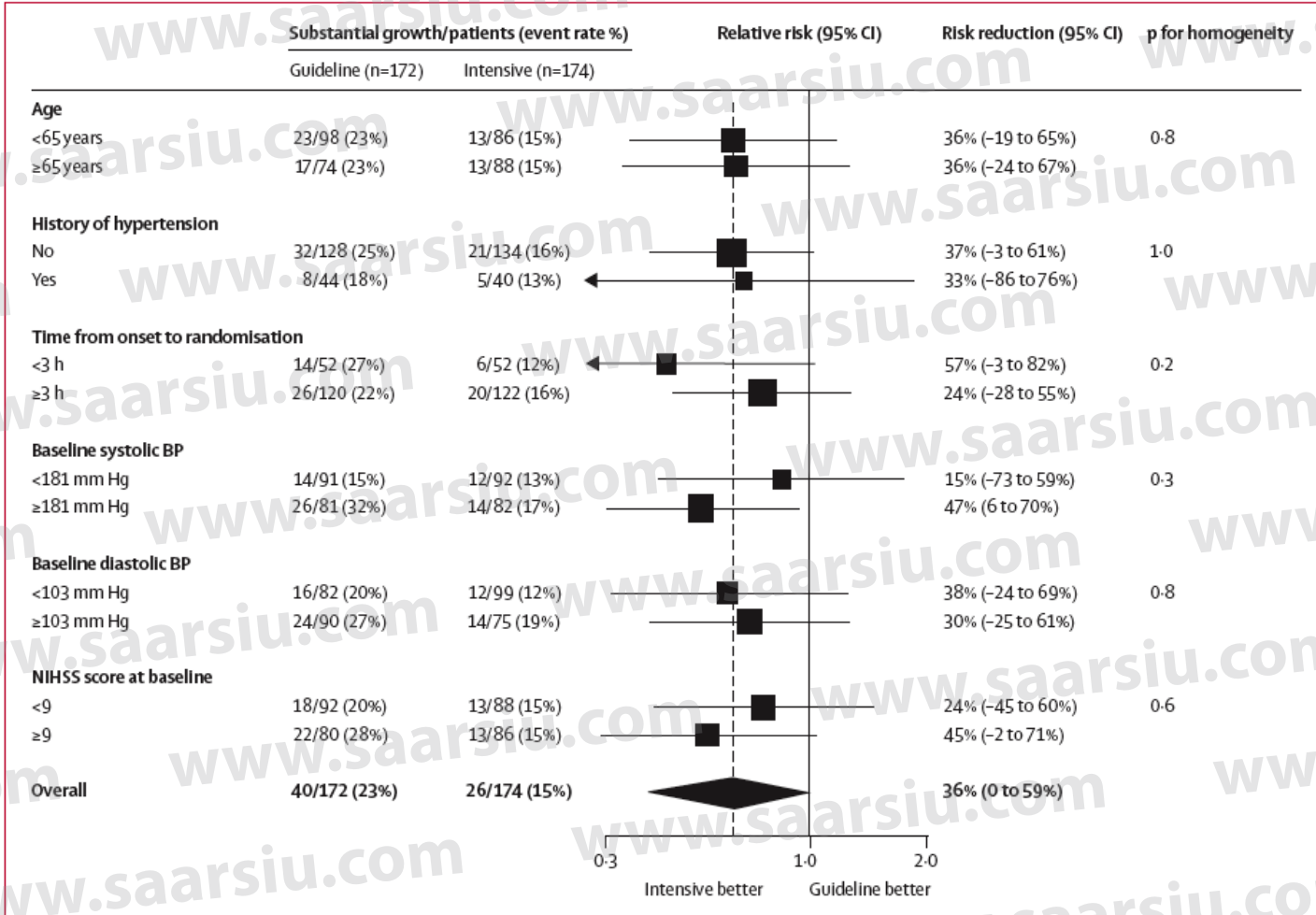
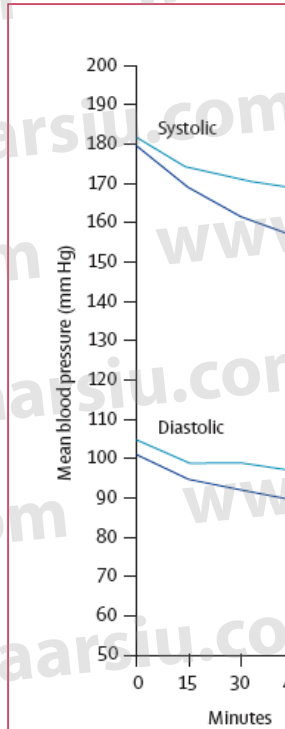


Figure 2: Mean systolic and diastolic blood pressure over 30 minutes. Figure 3: Effect on substantial haematoma growth in predefined subgroups

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ESTABLISHED IN 1812

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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.,

Multicentrique

Internationale

2839 patients

HIC < 6h

HTA > 150mmHg

Exclus : GCS < 6 / HIC massive ou nécessitant chirurgie

**PAS < 140mmHg dans
l'heure puis pendant 7 jours**

VS

PAS < 180mmHg

ETUDE INTERACT2

Table 3. Primary, Secondary, and Safety Outcomes at 90 Days.*

Variable	Intensive Blood-Pressure Lowering (N = 1399)	Guideline- Recommended Blood-Pressure Lowering (N = 1430)	Odds Ratio (95% CI)	P Value
Primary outcome	Primary outcome: death or major disability — no./total no. (%)†			
Secondary outcome	719/1382 (52.0) 785/1412 (55.6) 0.87 (0.75–1.01) 0.06			
Score on the modified Rankin scale — no./total no. (%)‡	0.87 (0.77–1.00) 0.04			
0: No symptoms at all	112/1382 (8.1)	107/1412 (7.6)		
1: No substantive disability despite symptoms	292/1382 (21.1)	254/1412 (18.0)		
2: Slight disability	259/1382 (18.7)	266/1412 (18.8)		
3: Moderate disability requiring some help	220/1382 (15.9)	234/1412 (16.6)		
4: Moderate–severe disability requiring assistance with daily living	250/1382 (18.1)	268/1412 (19.0)		
5: Severe disability, bed-bound and incontinent	83/1382 (6.0)	113/1412 (8.0)		
6: Death by 90 days	166/1382 (12.0)	170/1412 (12.0)		
Death — no./total no. (%)	166/1394 (11.9)	170/1421 (12.0)	0.99 (0.79–1.25)	0.96
Health-related quality of life§				
Problems with mobility — no./total no. (%)	767/1203 (63.8)	821/1231 (66.7)	0.88 (0.74–1.04)	0.13
Problems with self-care — no./total no. (%)	563/1202 (46.8)	635/1230 (51.6)	0.83 (0.70–0.97)	0.02
Problems with usual activities — no./total no. (%)	731/1203 (60.8)	814/1231 (66.1)	0.79 (0.67–0.94)	0.006
Problems with pain or discomfort — no./total no. (%)	477/1197 (39.8)	552/1227 (45.0)	0.81 (0.69–0.95)	0.01
Problems with anxiety or depression — no./total no. (%)	406/1192 (34.1)	463/1220 (38.0)	0.84 (0.72–1.00)	0.05
Overall health utility score	0.60±0.39	0.55±0.40		0.002
Living in residential care facility — no./total no. (%)	108/1222 (8.8)	114/1248 (9.1)	0.96 (0.73–1.27)	0.80
Duration of initial hospitalization — days				0.43
Median	20	19		
Interquartile range	12–35	11–33		

NS

ETUDE INTERACT2

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1: No substantive disability despite symptoms	292/1382 (21.1)	254/1412 (18.0)		
2: Moderate disability despite symptoms	375/1382 (27.2)	389/1412 (27.5)		
3: Moderate to severe disability despite symptoms	253/1382 (18.3)	254/1412 (18.0)		
4: Severe disability, bed-bound and incontinent	83/1382 (6.0)	113/1412 (8.0)		
5: Severe disability, bed-bound and incontinent	83/1382 (6.0)	113/1412 (8.0)		
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Duration of initial hospitalization — days				0.43
Median	20	19		
Interquartile range	12–35	11–33		

Meilleure récupération neurologique observée chez des patients avec l'abaissement le plus important de la PA (>20mmHg) durant la 1^{ère} heure et des chiffres de PA maintenus bas durant 7 jours

INS

European Stroke Organisation (ESO) guidelines for the management of spontaneous intracerebral hemorrhage

Int J Stroke 2014

Recommendation

In acute ICH within 6 h of onset, intensive blood pressure reduction (systolic target <140 mmHg in <1 h) is safe and may be superior to a systolic target <180 mmHg. No specific agent can be recommended.

Quality of evidence: Moderate

Strength of recommendation: Weak

... *sauf si PIC* ↑

→ *monitoring PIC-PPC*

Pourquoi l'Eupressyl

- Pas de vasodilatation cérébrale, pas d'aggravation de l'HIC
- Maniable par voie IV
- Pas d'effet hypotenseur trop marqué
- Pas de tachycardie réflexe (patients à risque vasculaire)

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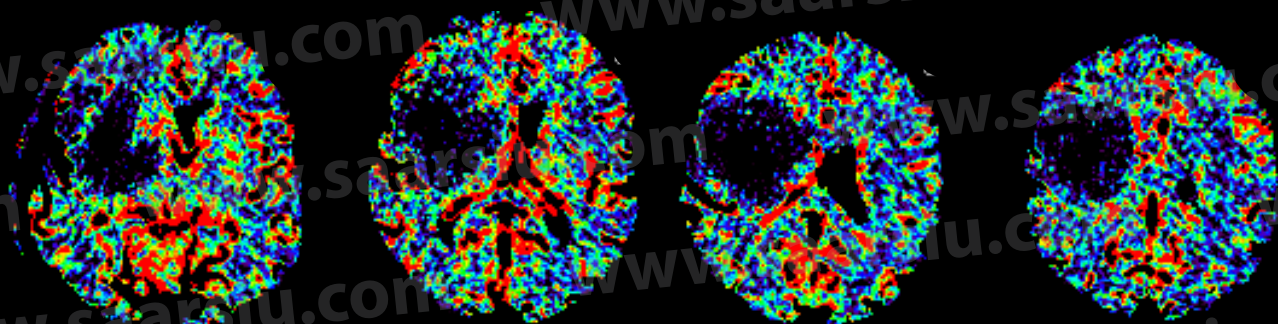
Strength of recommendation: Weak

... *sauf si PIC* ↑

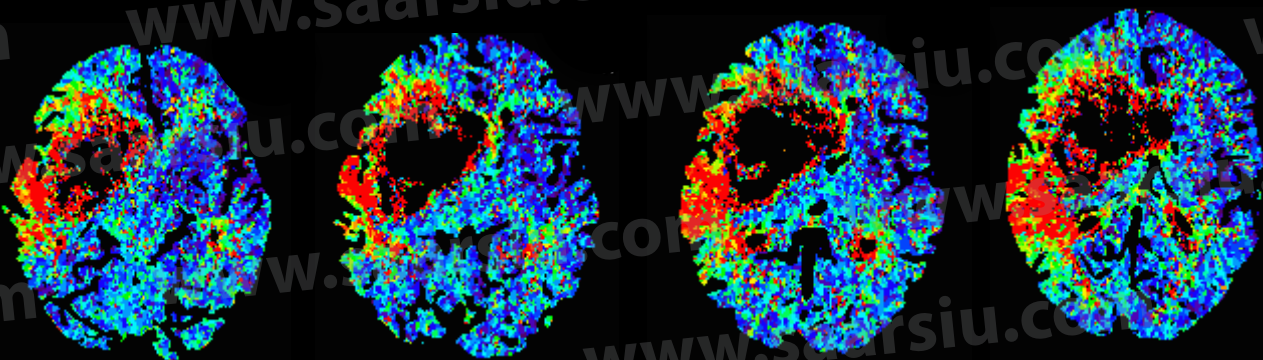
→ *monitoring PIC-PPC*



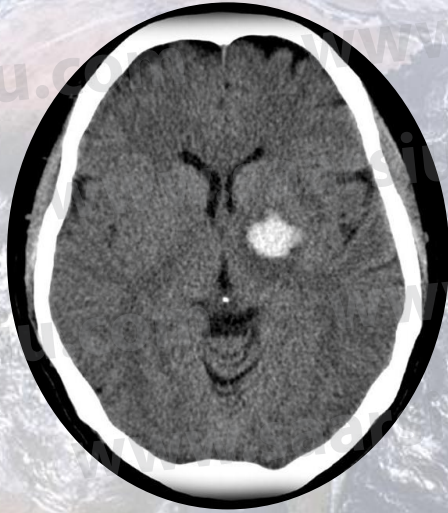
DSC



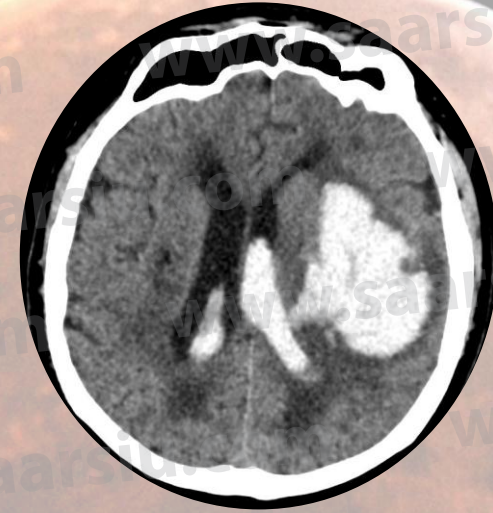
TTP



HTA ET PATIENT CRITIQUE



PAS < 140mmHg



PPC > 70mmHg

Contrôle de la PIC

OBJECTIFS DU TRAITEMENT

Arrêter le
saignement

Contrôle
tensionnel

Contrôle
hémostase

ICH: Arrêter le saignement

of Coagulopathy

risk of ICH and ICH expansion with underlying hemostatic

ities

iticoagulants

telef agents

coagulation factor deficiencies

or acquired platelet deficiencies

PATIENT SOUS ANTI-COAGULANTS

AVK

Vitamine K 10mg IV

PPSB 25UI/kg

HBPM

Protamine 1mg pour 100UI si injection <6h
Protamine 0,5mg pour 100UI si injection >6h

DABIGATRAN

Antagonisation par IDARUCIZUMAB
(2,5g sur 5 min x 2 soit 5g au total)

Si indisponible, FEIBA ou PPSB

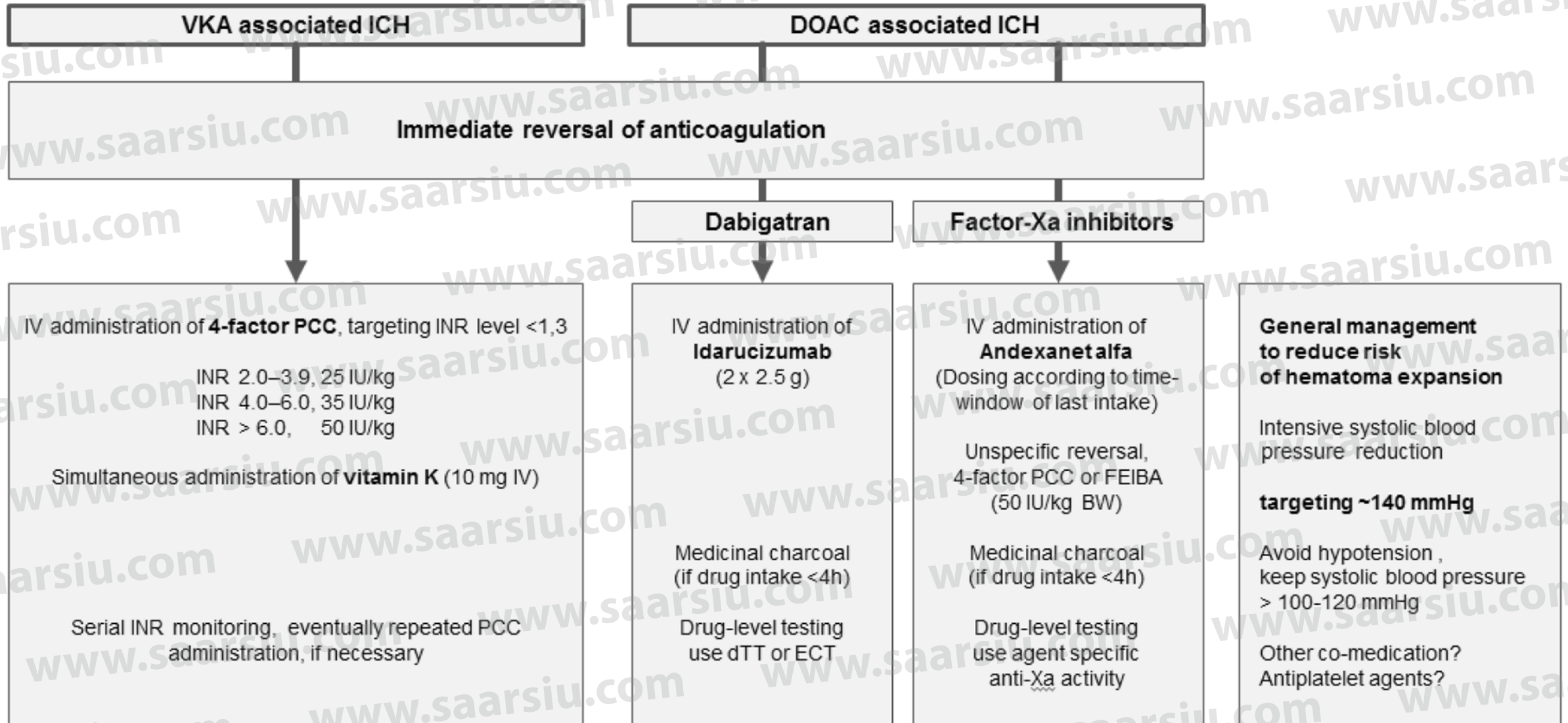
Rivaroxaban (Xarelto*) Apixaban (Eliquis)

andexanet alfa (AndexXa) 30-50UI/kg

FEIBA ou PPSB 50UI/kg



ICH: Arrêter le saignement



ICH: Plaquettes

Platelet transfusion versus standard care after acute stroke due to spontaneous cerebral haemorrhage associated with antiplatelet therapy (PATCH): a randomised, open-label, phase 3 trial

M Irem Baharoglu*, Charlotte Cordonnier*, Rustam Al-Shahi Salman*, Koen de Gans, Maria M Koopman, Anneke Brand, Charles B Majoie, Ludo F Beenen, Henk A Marquering, Marinus Vermeulen, Paul J Nederkoorn, Rob J de Haan, Yvo B Roos, for the PATCH Investigators†

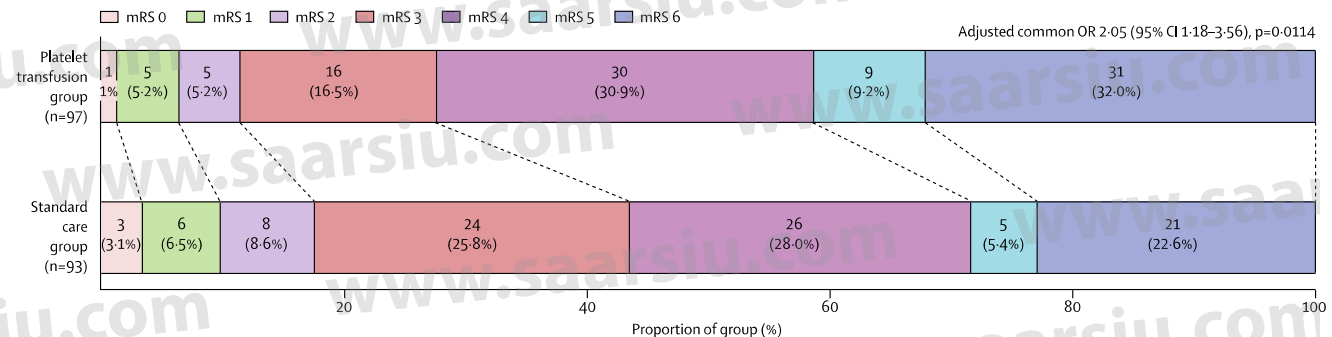
se with platelet goal > 100K

Volume ICH growth : NS

Outcome: Worsen !

	Platelet transfusion group (n=97)	Standard care group (n=93)	Odds ratio (95%CI)	p value
Alive at 3 months (survival)	66 (68%)	72 (77%)	0.62 (0.33-1.19)	0.15
mRS score 4-6 at 3 months	70 (72%)	52 (56%)	2.04 (1.12-3.74)	0.0195
mRS score 3-6 at 3 months	86 (89%)	76 (82%)	1.75 (0.77-3.97)	0.18
Median ICH growth at 24 h (mL)*	2.01 (0.32-9.34)	1.16 (0.03-4.42)	..	0.81

Data are n (%) or median (IQR). mRS=modified Rankin Scale. ICH=intracerebral haemorrhage. *n=80 in platelet transfusion group and 73 in standard care group.

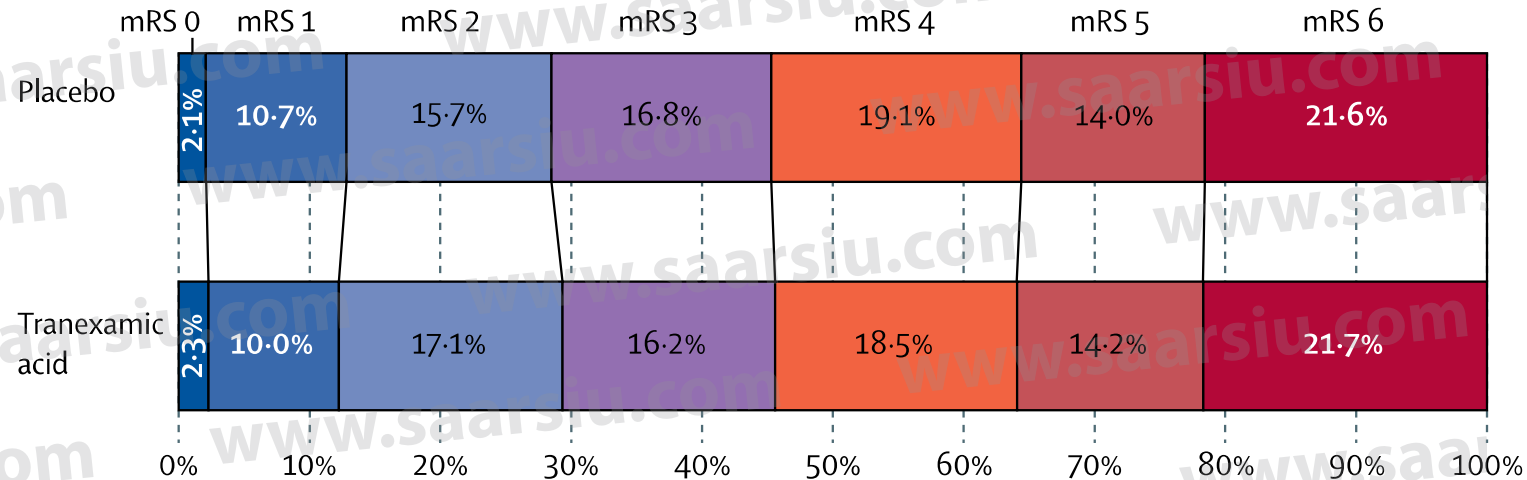
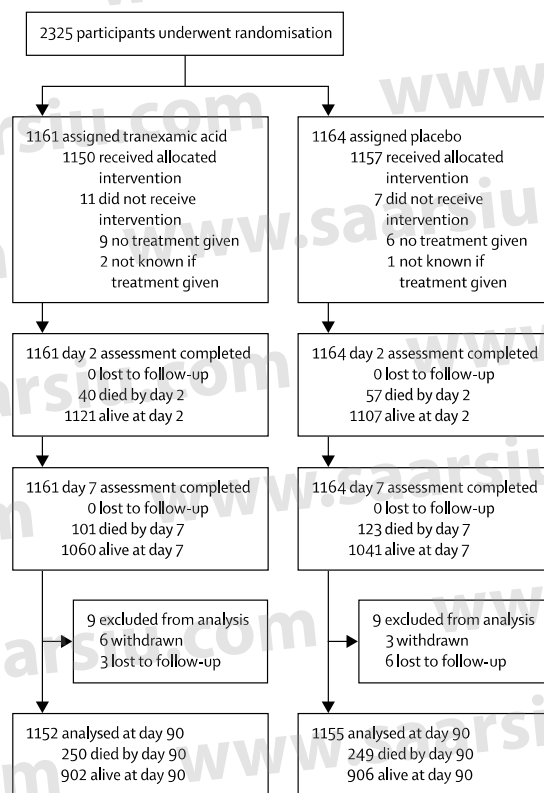


ICH : Acide Tranexamic

Tranexamic acid for hyperacute primary IntraCerebral Haemorrhage (TICH-2): an international randomised, placebo-controlled, phase 3 superiority trial

Nikola Sprigg, Katie Flaherty, Jason P Appleton, Rustam Al-Shahi Salman, Daniel Berezcki, Maia Beridze, Hanne Christensen, Alfonso Ciccone, Ronan Collins, Anna Czlonkowska, Robert A Dineen, Lelia Duley, Juan Jose Egea-Guerrero, Timothy J England, Kailash Krishnan, Ann Charlotte Laska, Zhe Kang Law, Serefur Ozturk, Stuart J Pocock, Ian Roberts, Thompson G Robinson, Christine Roffe, David Seiffge, Polly Scutt, Jegan Thanabalan, David Werring, David Whynes, Philip M Bath, for the TICH-2 Investigators*

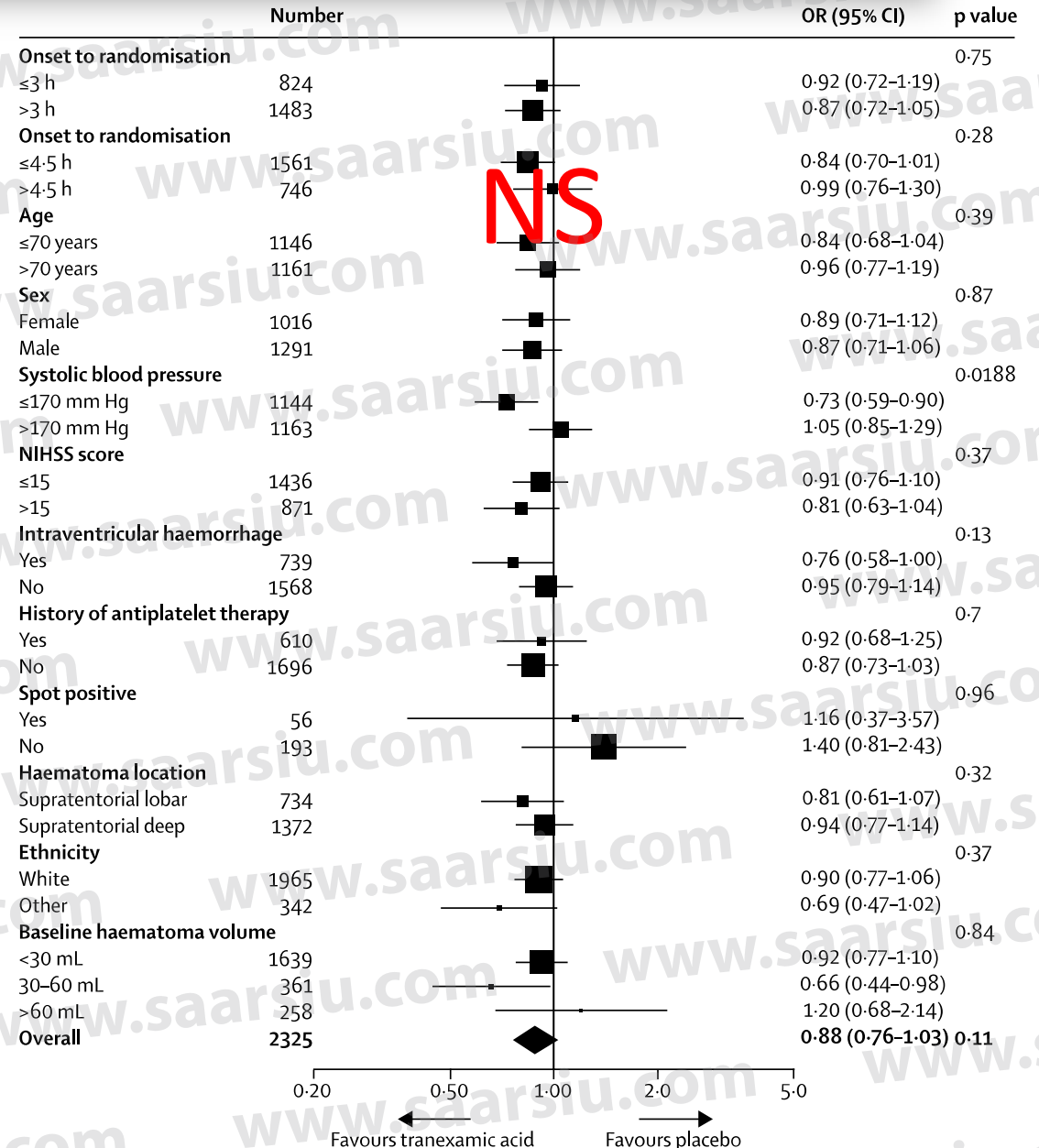
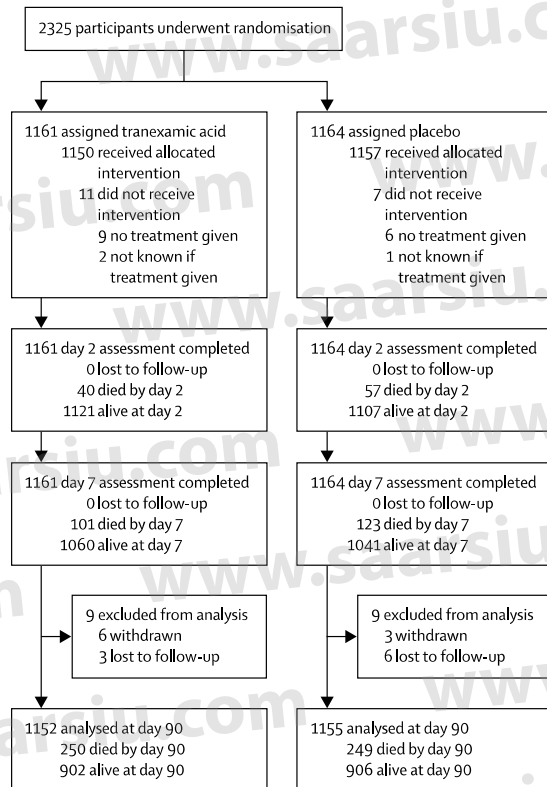
NS



ICH : Acide Tranexamic

Tranexamic acid for hyperacute primary IntraCerebral Haemorrhage (TICH-2): an international randomised, placebo-controlled, phase 3 superiority trial

Nikola Sprigg, Katie Flaherty, Jason P Appleton, Rustam Al-Shahi Salman, Daniel Berezcki, Maia Beridze, Hanne Christensen, Alfonso Ciccone, Ronan Collins, Anna Czlonkowska, Robert A Dineen, Lelia Duley, Juan Jose Egea-Guerrero, Timothy J England, Kailash Krishnan, Ann Charlotte Laska, Zhe Kang Law, Serefnur Ozturk, Stuart J Pocock, Ian Roberts, Thompson G Robinson, Christine Roffe, David Seiffge, Polly Scutt, Jegan Thanabalan, David Werrina, David Whynes, Philip M Bath, for the TICH-2 Investigators*

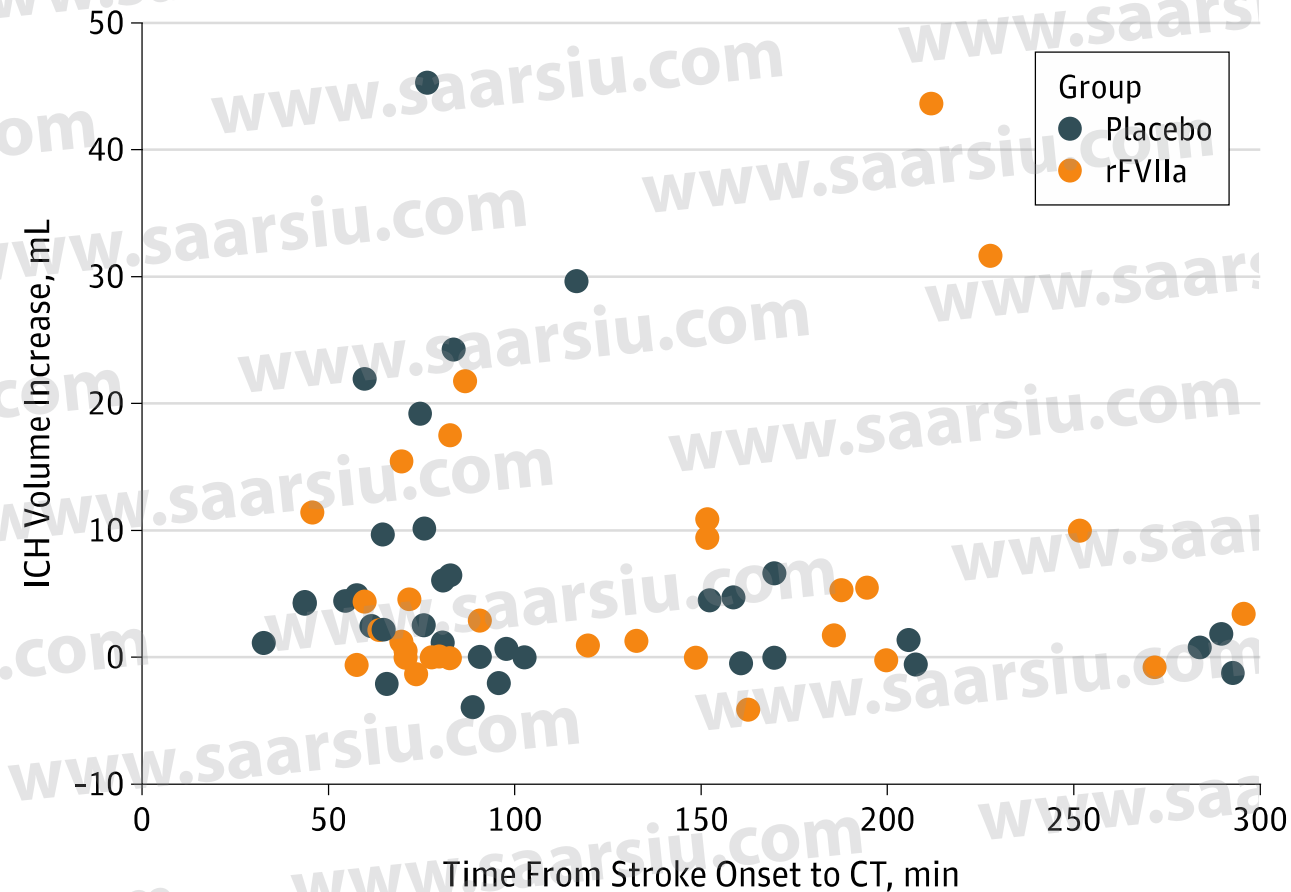
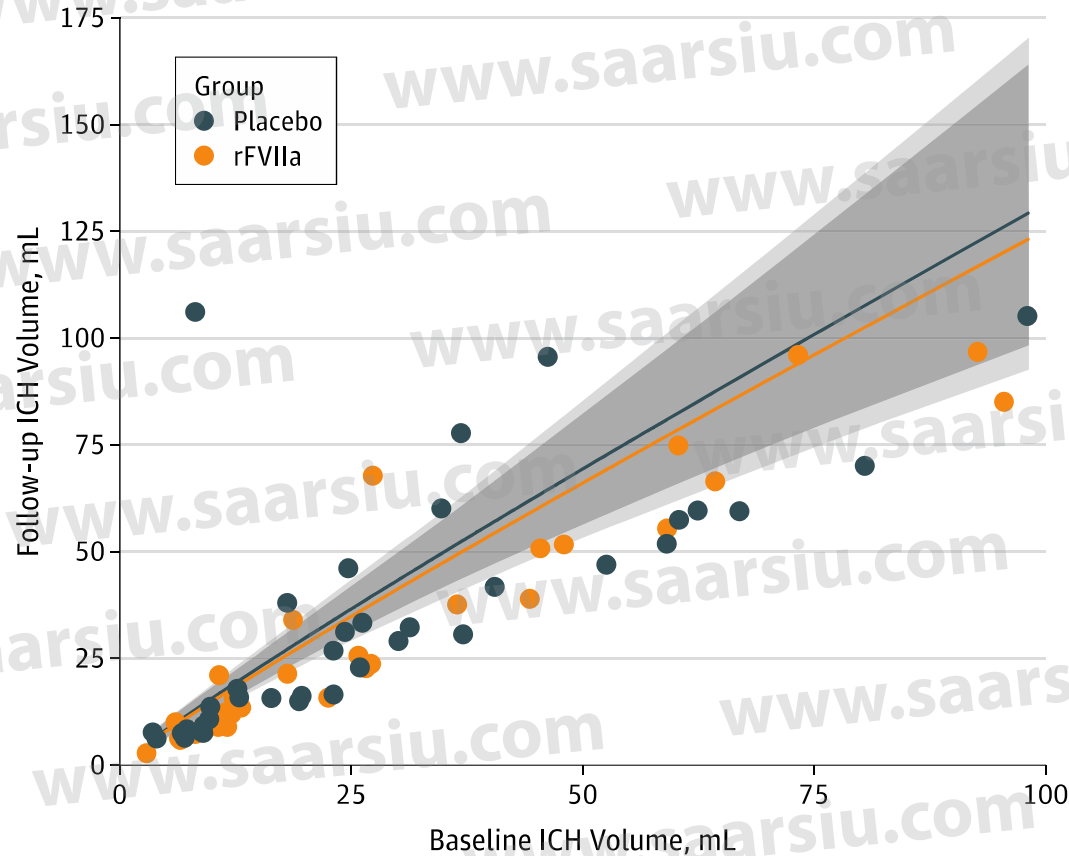


ICH : Facteur VII activé

JAMA Neurology | Original Investigation

Effect of Recombinant Activated Coagulation Factor VII
on Hemorrhage Expansion Among Patients
With Spot Sign–Positive Acute Intracerebral Hemorrhage
The SPOTLIGHT and STOP-IT Randomized Clinical Trials

NS



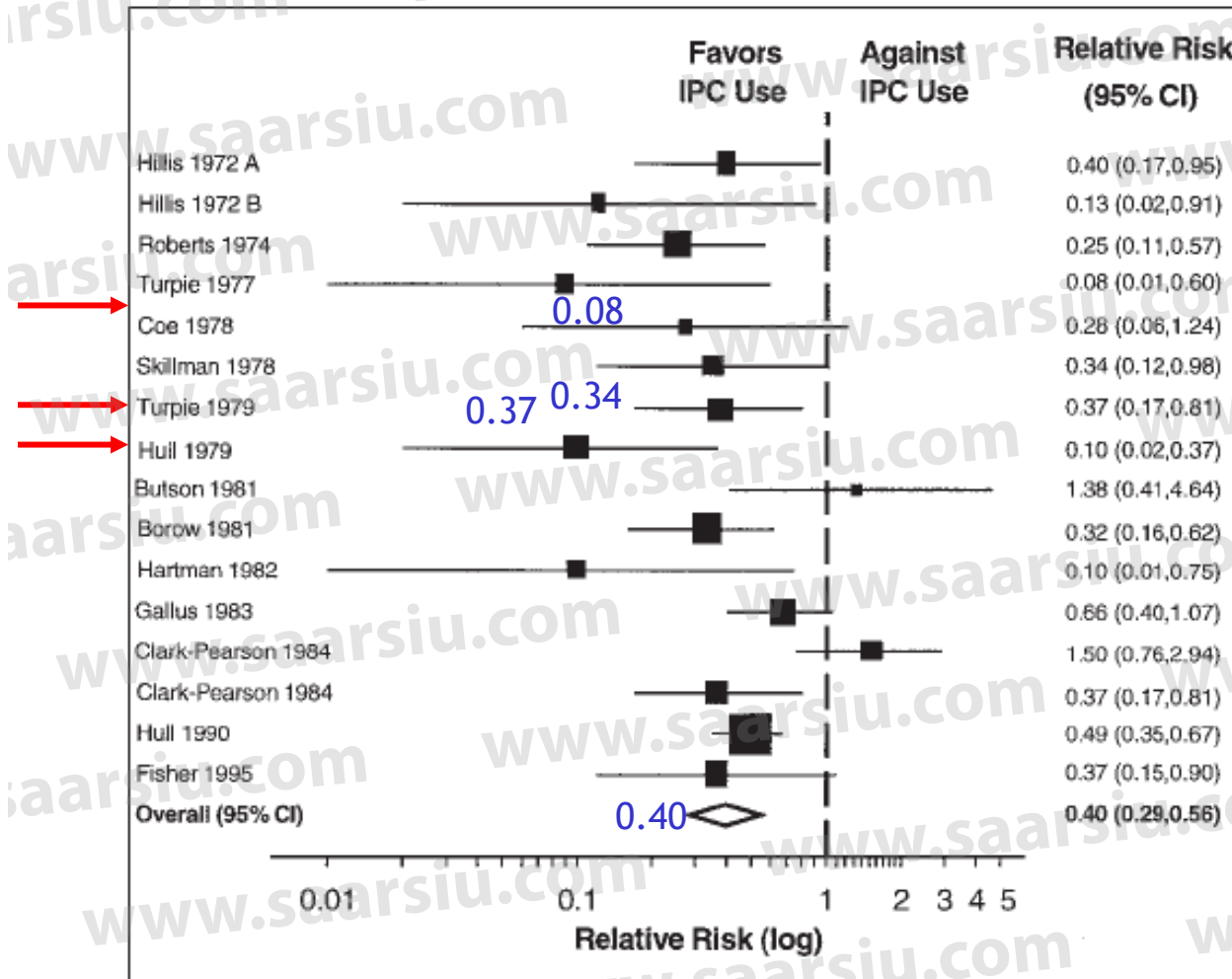
Intermittent Pneumatic Compression (IPC)



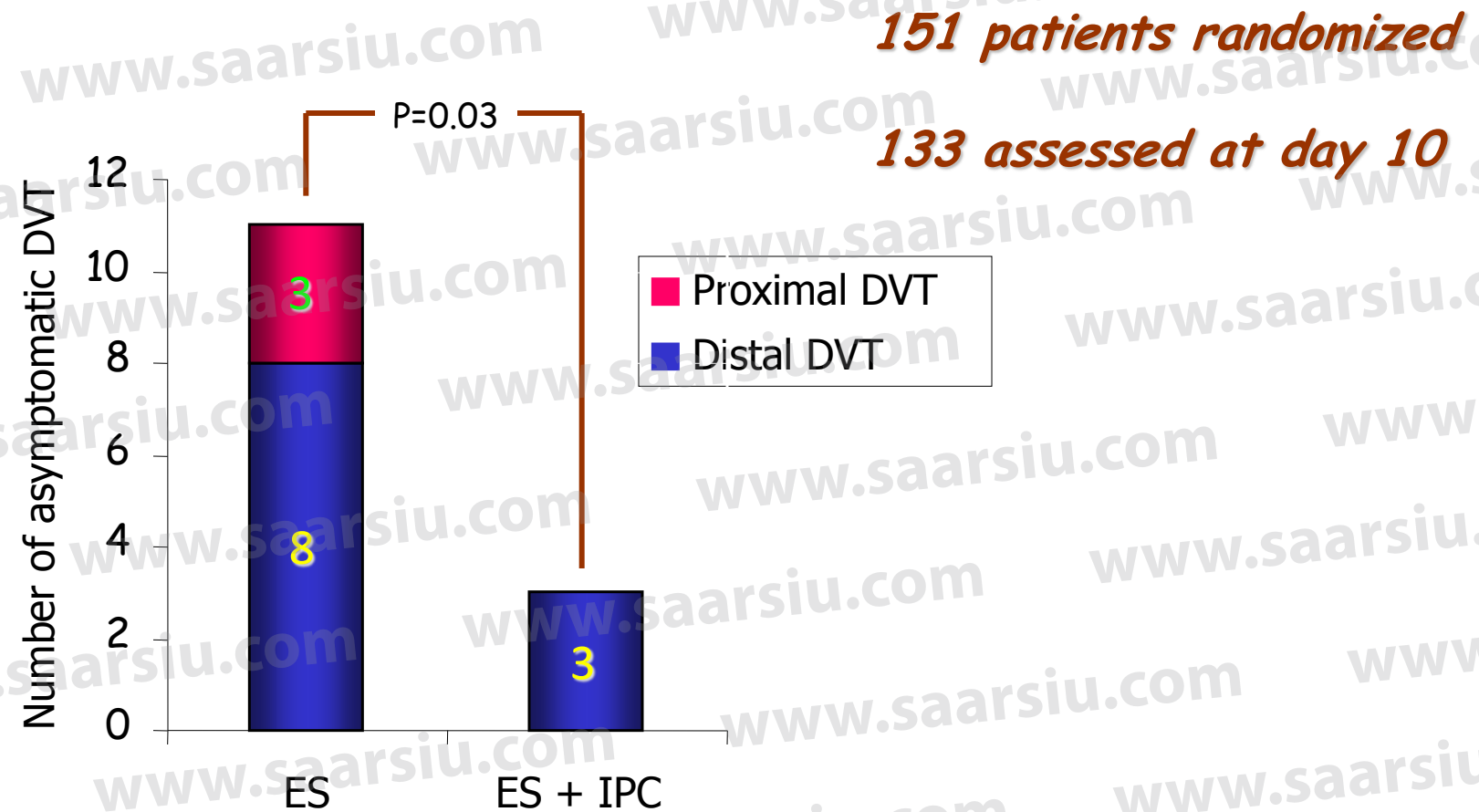
Benefit of IPC: Meta-analysis

2,270 patients in 15 eligible studies

Reduced the risk of DVT by 60%



VTE after haemorrhagic stroke: mechanical prophylaxis



VTE = 15.9 % 4.7 %



Antithrombotic and Thrombolytic Therapy for Ischemic Stroke

**Antithrombotic Therapy and Prevention of Thrombosis,
9th ed: American College of Chest Physicians
Evidence-Based Clinical Practice Guidelines**

3.2.1. In patients with acute primary intracerebral hemorrhage and restricted mobility, we suggest prophylactic-dose subcutaneous heparin (UFH or LMWH) started between days 2 and 4 or intermittent pneumatic compression devices over no prophylaxis (Grade 2C).

3.2.2. In patients with acute primary intracerebral hemorrhage and restricted mobility, we suggest prophylactic-dose LMWH over prophylactic-dose UFH (Grade 2B).

3.2.3. In patients with primary intracerebral hemorrhage and restricted mobility, we suggest against elastic compression stockings (Grade 2B).

VTE after haemorrhagic stroke: mechanical prophylaxis

LMWH seems safe after 24 hours following SAH except increased risk of hemorrhage (antiplatelet agents)

There is no reason to delay anticoagulation after day 5 (except ...)

OBJECTIFS DU TRAITEMENT

Arrêter le
saignement

Contrôler
la PPC

PATIENT EN HTIC : OPTIMISATION DU DSC

EVACUATION DE L'HIC

DVE

SEDATION PROFONDE

PROCLIVE

CONTRÔLE CIBLE DE LA
TEMPERATURE 37°C

OSMOTHERAPIE

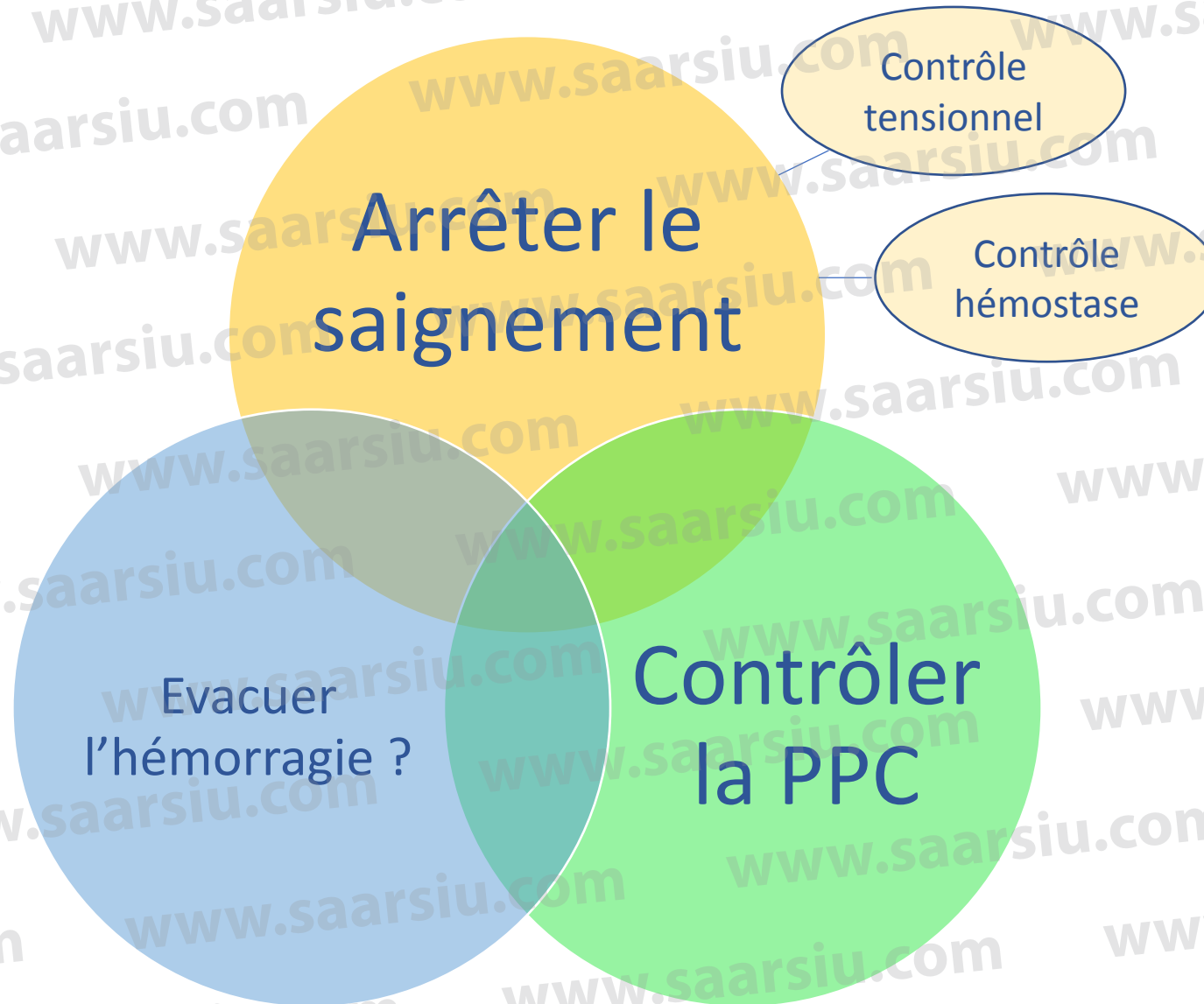
HYPERVENTILATION
MODEREE

HYPOTHERMIE 35-36°C

COMA BARBITURIQUE

CRANIECTOMIE ?

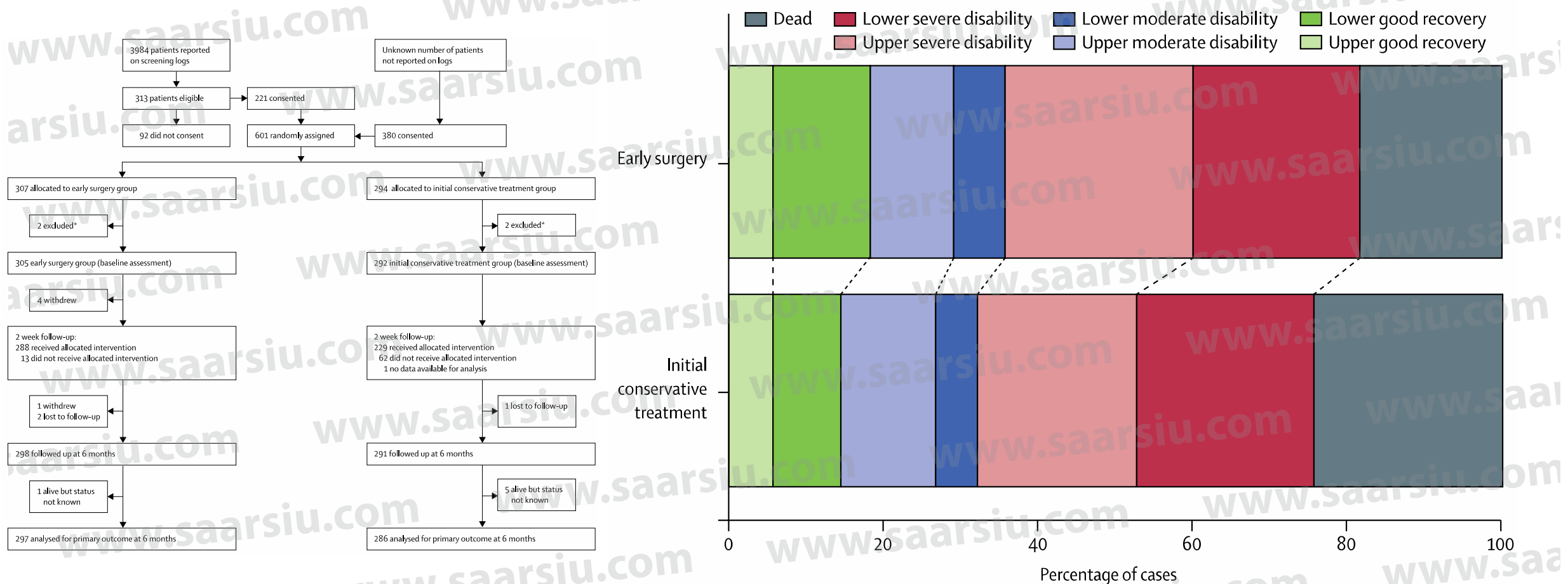
OBJECTIFS DU TRAITEMENT



ICH: Evacuation de l'hémorragie

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

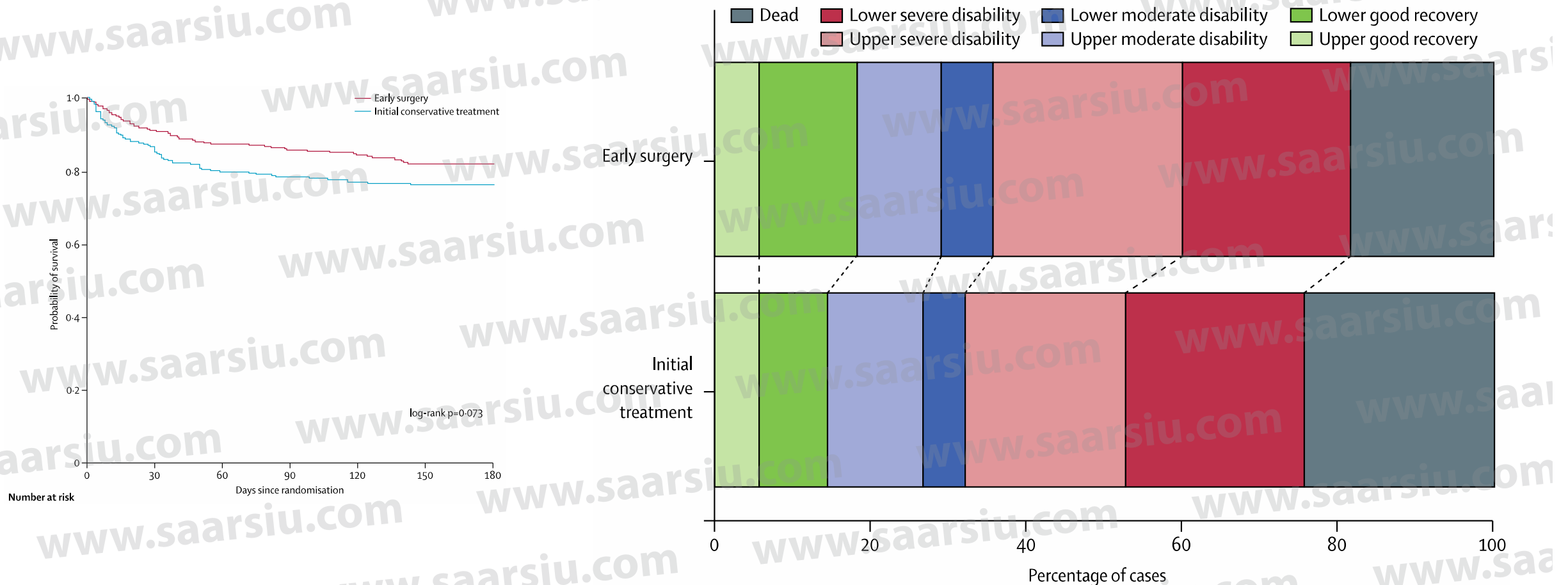
A David Mendelow, Barbara A Gregson, Elise N Rowan, Gordon D Murray, Anil Gholkar, Patrick M Mitchell, for the STICH II Investigators



ICH: Arrêter le saignement

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

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

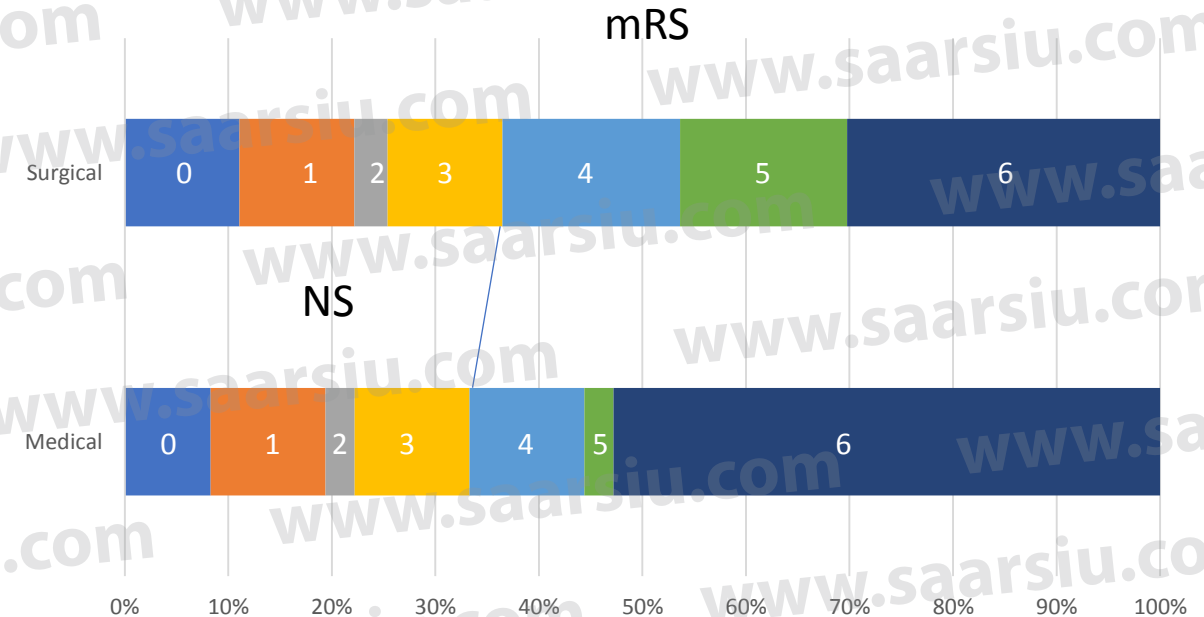


ICH: Arrêter le saignement

Intracerebral hemorrhage in Intensive Care Unit:
early prognostication fallacies.
A single center retrospective study

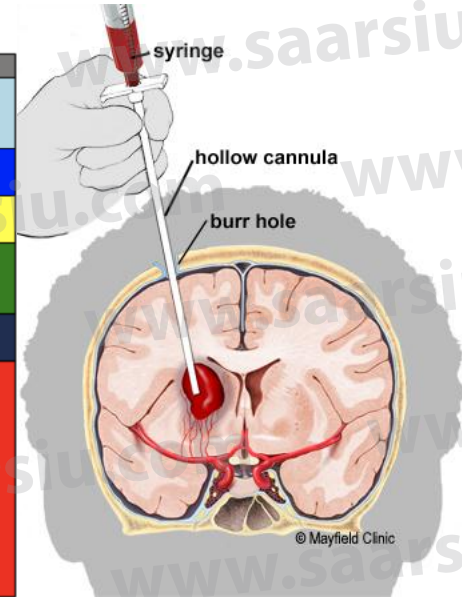
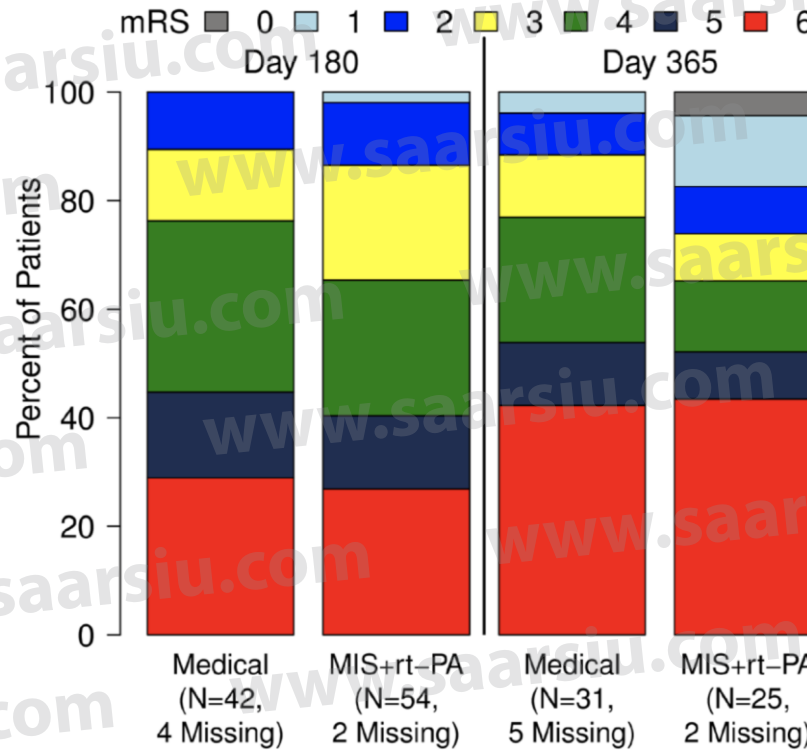
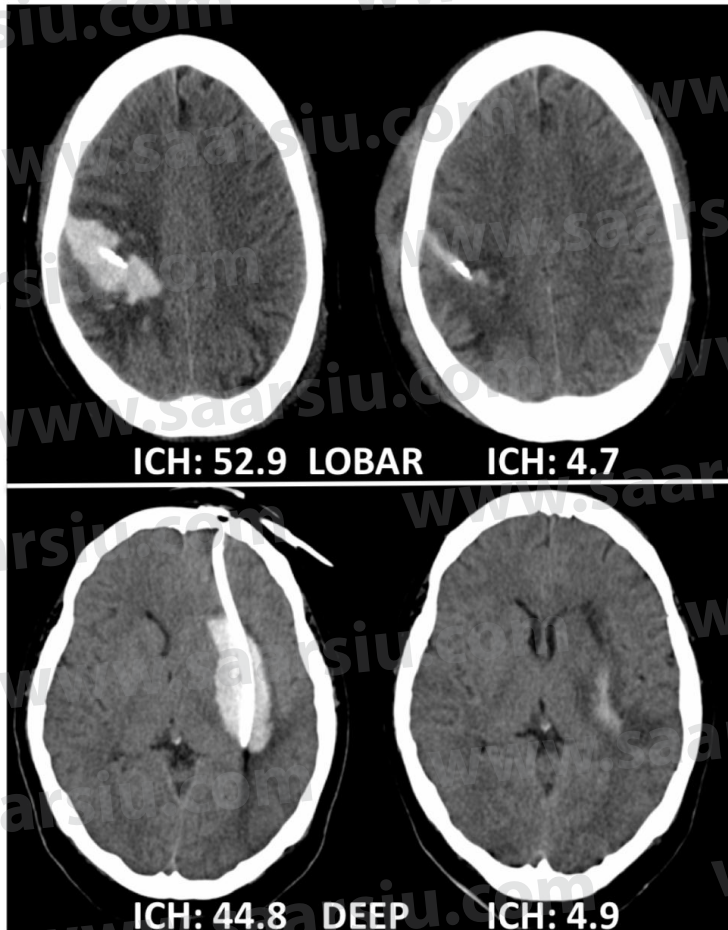
Stefano SPINA¹, Chiara MARZORATI¹, Alessia VARGIOLU²,
Federico MAGNI¹, Matteo RIVA¹, Matteo ROTA², Carlo GIUSSANI^{1,3},
Erik P. SGANZERLA^{1,3}, Giuseppe CITERIO^{1,2*}

Surgery : less mRS 5
but ++++ mRS>3



ICH prognosis and surgery

Minimally invasive surgery with thrombolysis (MISTIE II)



Catheters into hematoma

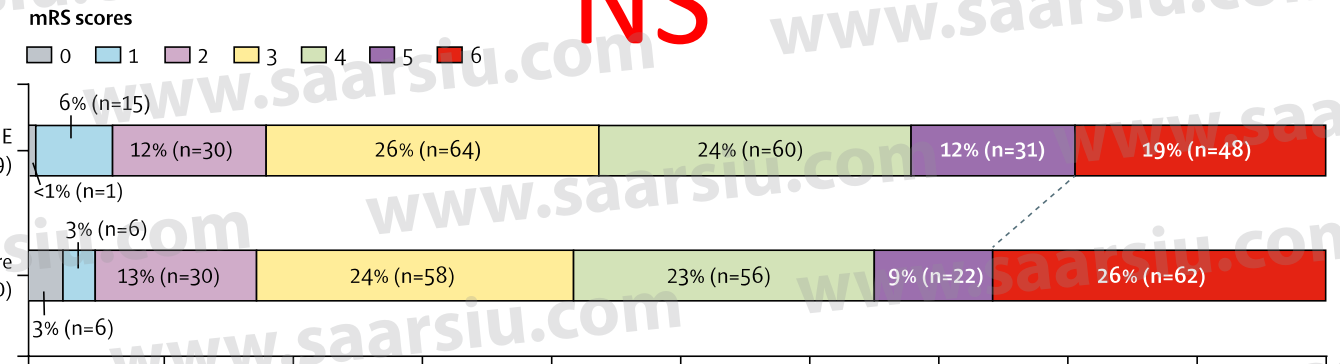
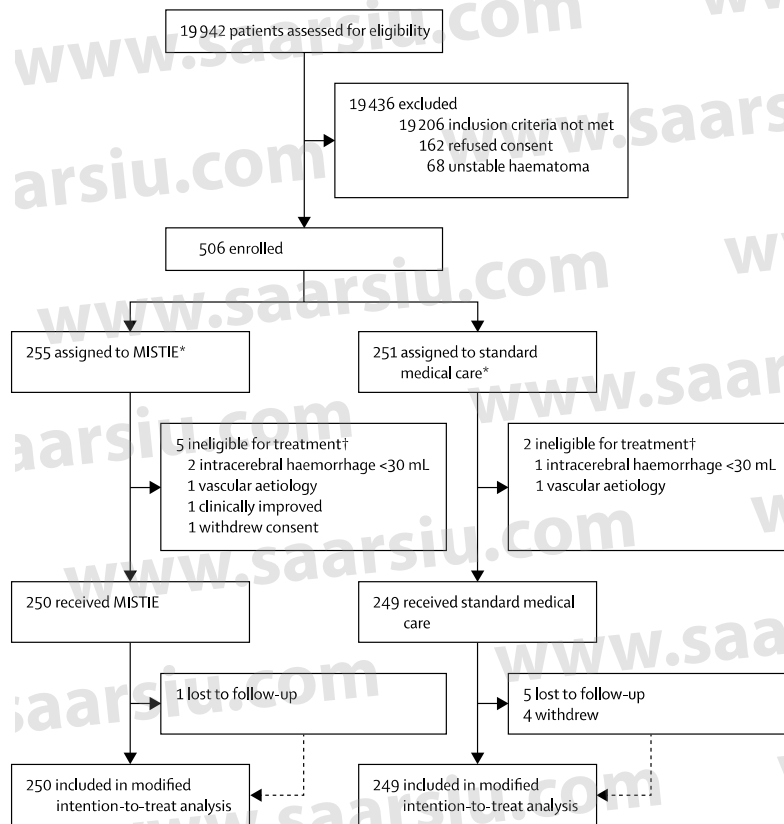
rtPA (Alteplase) during 3 days

ICH prognosis and surgery

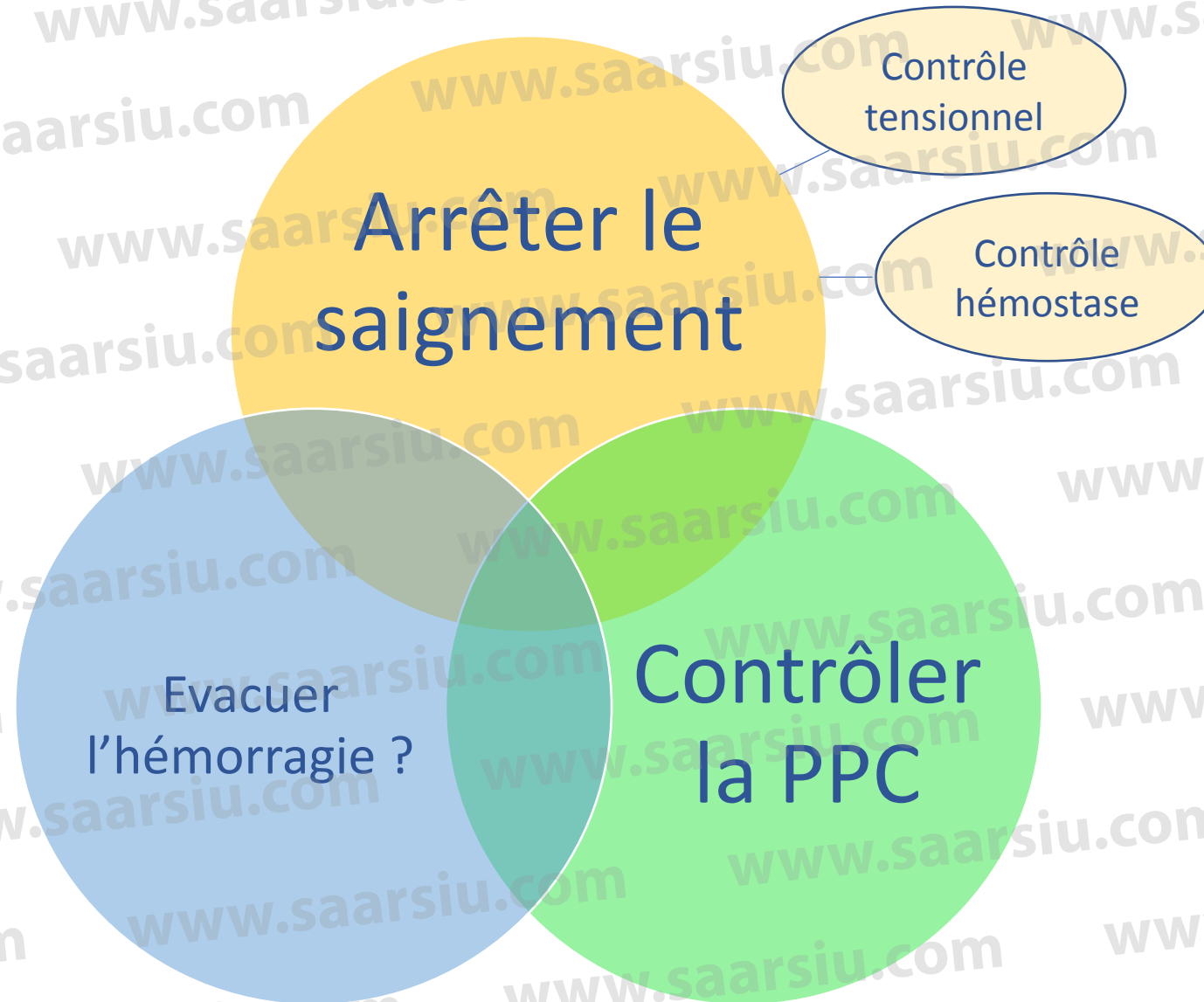
Minimally invasive surgery with thrombolysis (MISTIE III)

Efficacy and safety of minimally invasive surgery with thrombolysis in intracerebral haemorrhage evacuation (MISTIE III): a randomised, controlled, open-label, blinded endpoint phase 3 trial

NS



OBJECTIFS DU TRAITEMENT



CAS DE L'HIC DE FOSSE POSTERIEURE

INDICATION CHIRURGICALE SI

TROUBLES DE CONSCIENCE

SIGNES DE COMPRESSION DU TC

ASSOCIE GENERALEMENT

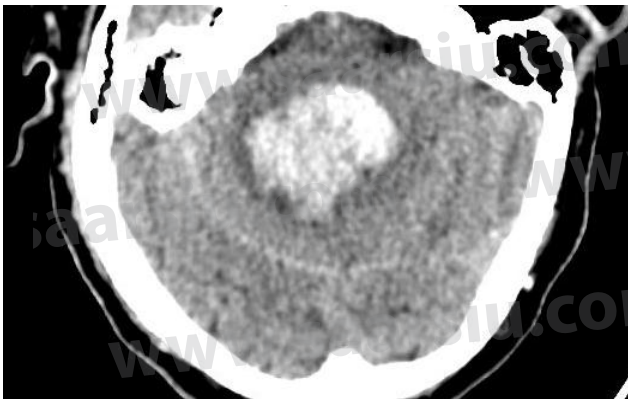
EVACUATION DE L'HIC



CRANIECTOMIE DECOMPRESSIVE



DVE si compression du V4



CAUSES DE DECES

Table 2 Cause of death

Cause of death	n	%
Brain death	126	29.2
LSI withdrawn early	95	22.0
LSI limited early	33	7.7
LSI withdrawn late	121	28.1
LSI limited late	43	10.0
Medical	13	3.0
Total	431	100

LSIs = life-sustaining interventions (including mechanical ventilation, intubation, vasopressors); early = within 24 hours of admission; late = >24 hours after admission.

29% Mort
encéphalique

67% LATA

PROPHETIE AUTO-REALISATRICE ?



Conclusion

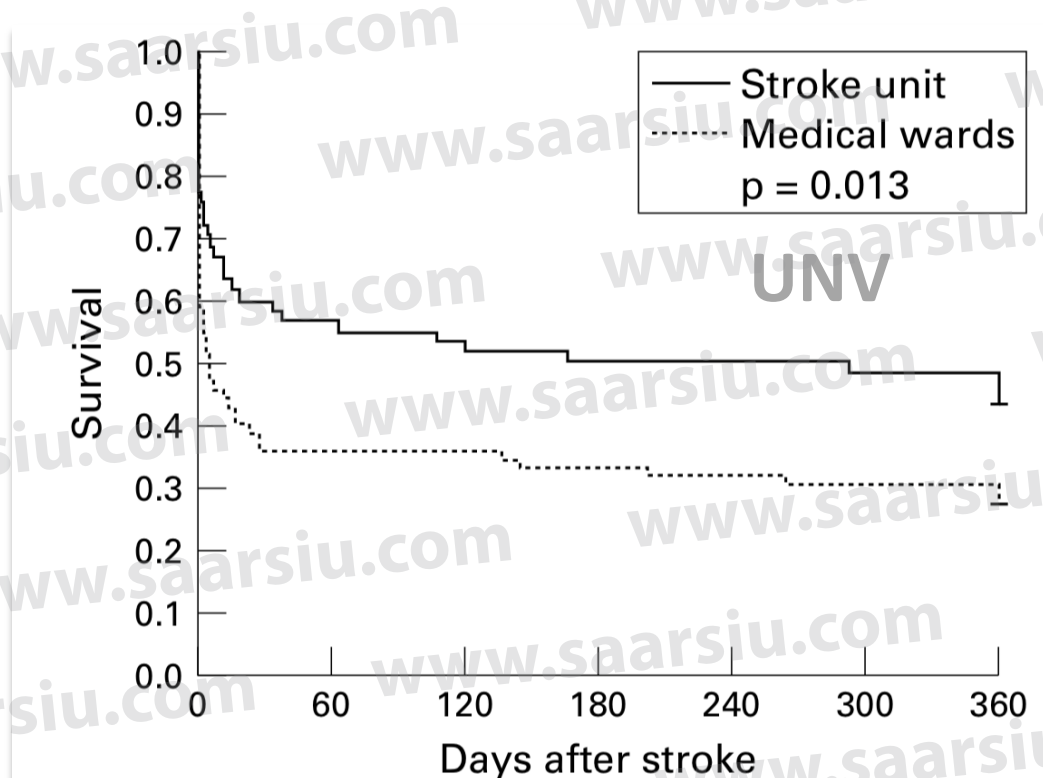


Figure 1. Survival after intracranial haemorrhage by treatment group (n=121).

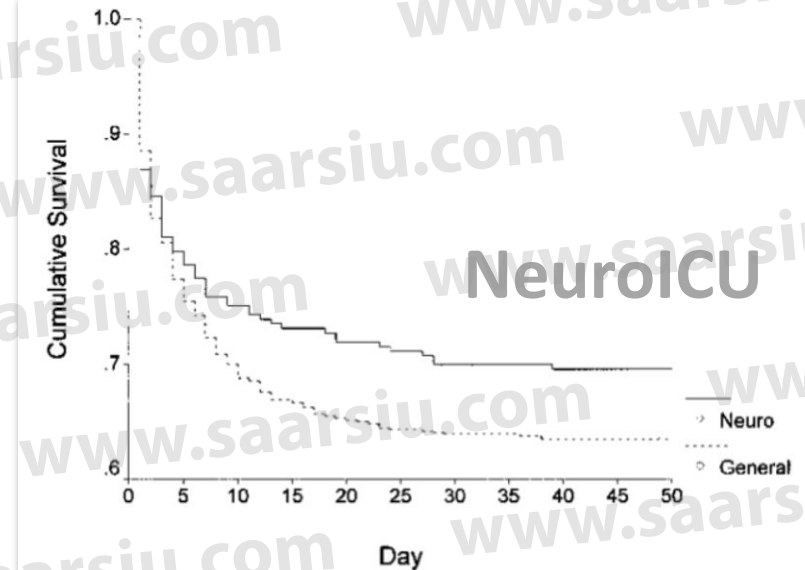


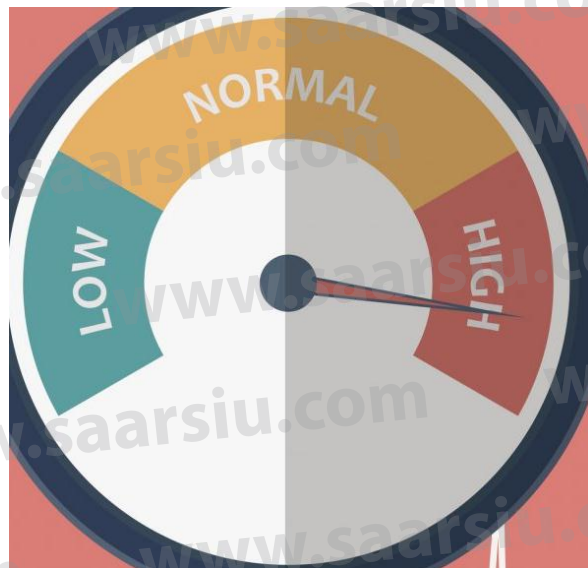
Figure 1. Survival function of the Cox survival analysis plotted as the mean of the covariates identified in the multiple regression indicating cumulative survival of patients admitted to neurologic/neurosurgical (Neuro) and general intensive care units.

Stroke center

Mortality at 1 month : 39% vs 63%

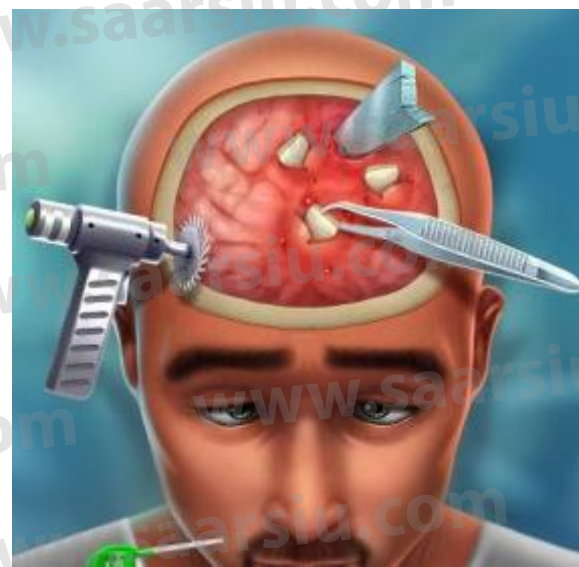
NEURO ICU > ICU

PAS < 140mmHg
dans l'heure



Traitement
hémostatiques
adaptés

Optimisation du
DSC chez le malade
critique



Intérêt de la
chirurgie limitée

Merci pour votre attention

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