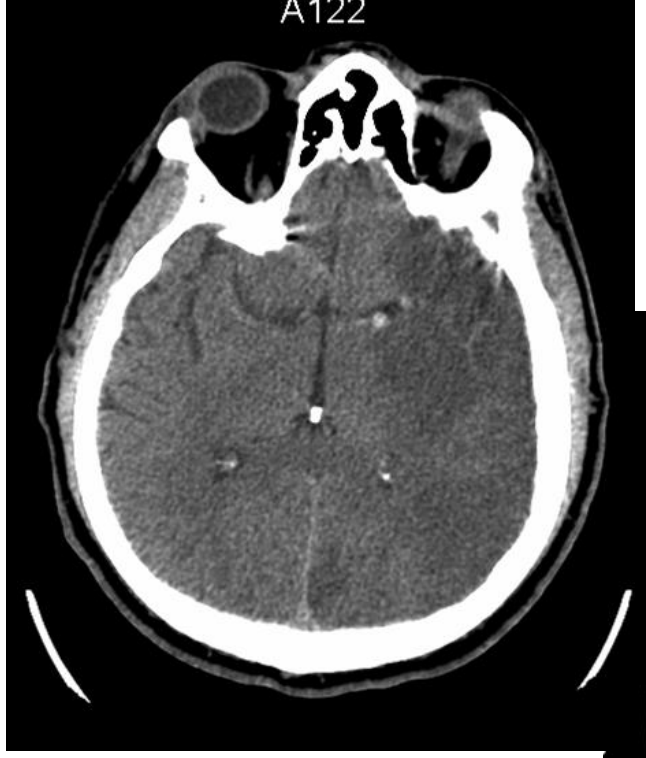
Edema cerebrale

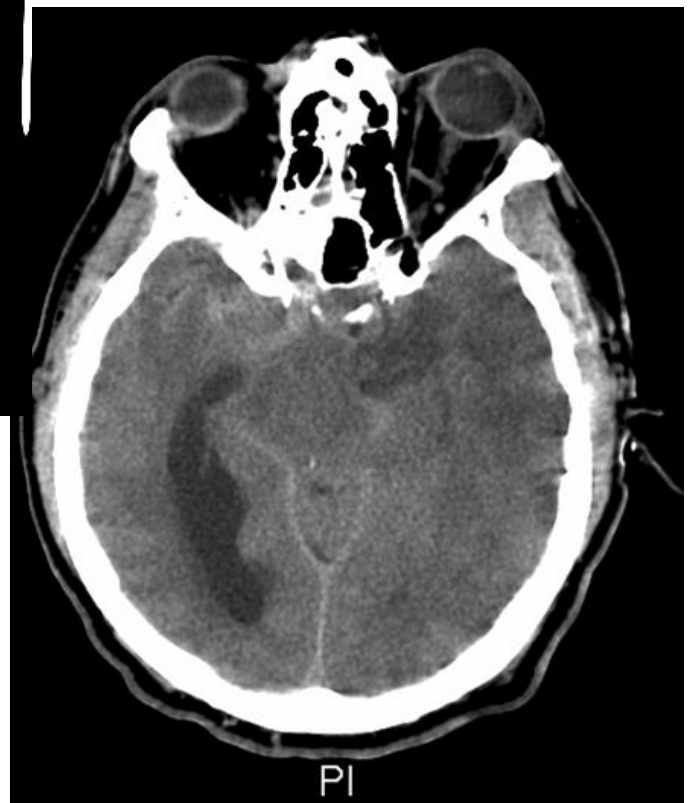
Steroidi

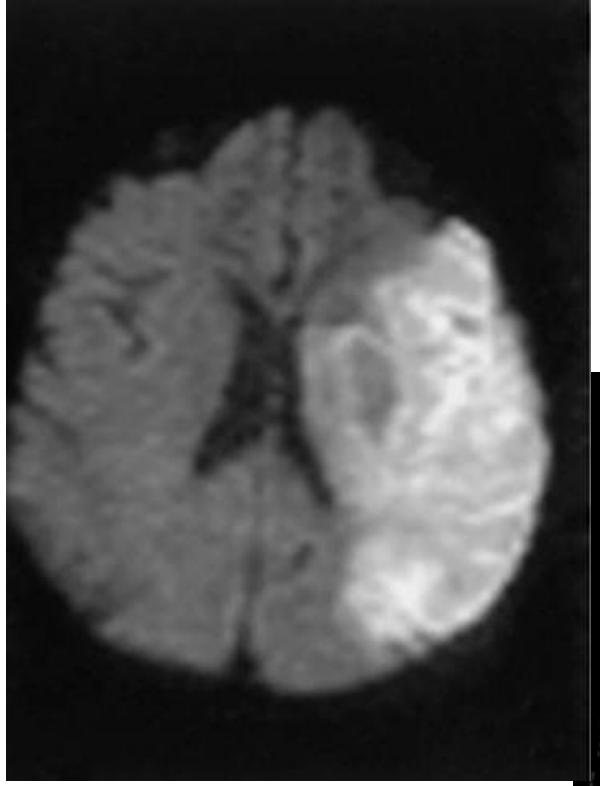
Effetti collaterali:

- *sanguinamenti gastrointestinali*
- *infezioni*
- *iperglicemia difficilmente controllabile*
- *ipertensione arteriosa*

malignant MCA syndrome





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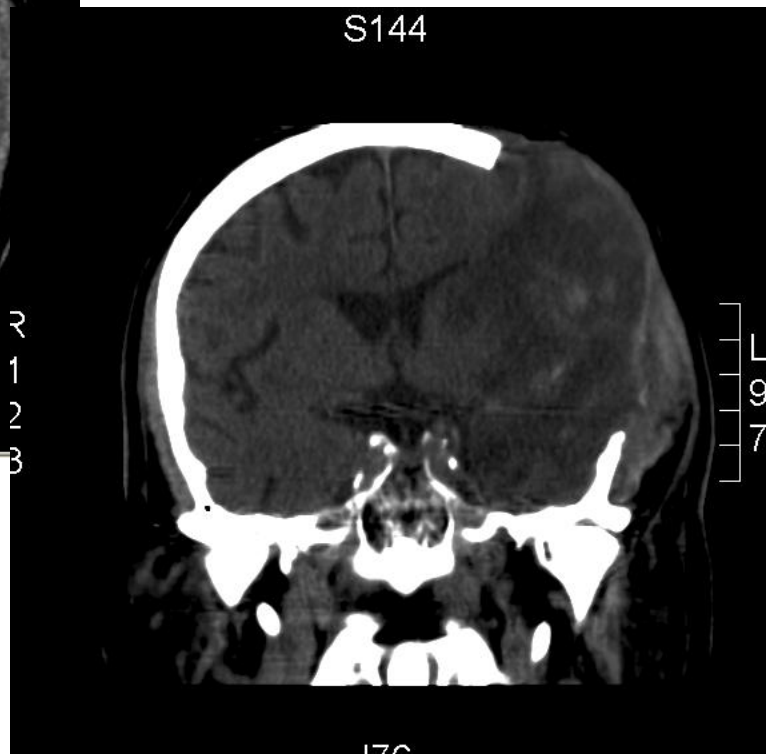
S144
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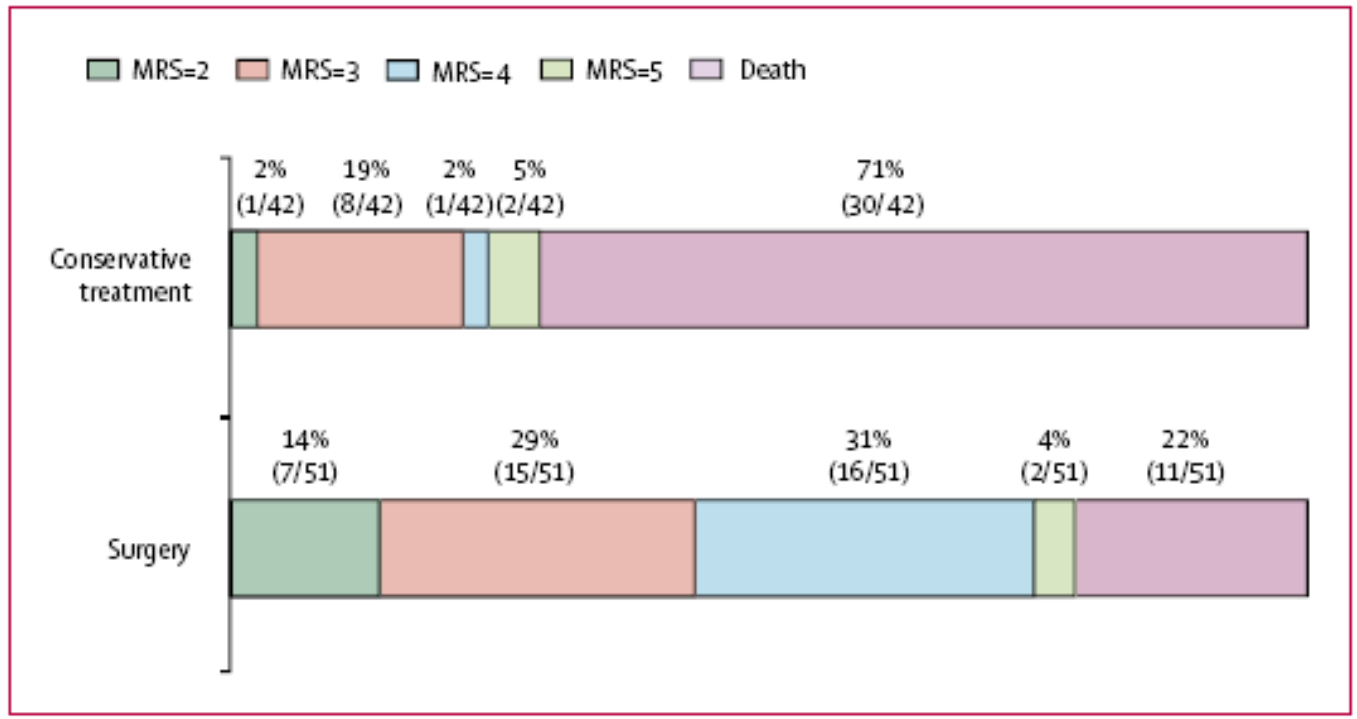
Malignant MCA stroke

Inclusion criteria

- Age 18–60 years
- Clinical deficits suggestive of infarction in the territory of the MCA
- NIHSS >15
- Decrease in the level of consciousness to a score of 1 or greater on item 1a of the NIHSS
- Signs on CT of an infarct of at least 50% of the MCA territory or infarct volume >145 cm^3 as shown on diffusion-weighted MRI
- Surgery within 48 h after onset of symptoms

Exclusion criteria

- Prestroke score on the mRS ≥2
- Two fixed dilated pupils
- Contralateral ischaemia or other brain lesion that could affect outcome
- Space-occupying haemorrhagic transformation of the infarct (≥parenchymal haemorrhage grade 2)
- Life expectancy <3 years
- Other serious illness that could aff ect outcome
- Known coagulopathy or systemic bleeding disorder
- Contraindication for anaesthesia
- Pregnancy


MRS=2
MRS=3
MRS=4
MRS=5
Death
2%
(1/42)
19%
(8/42)
2%
(1/42)
5%
(2/42)
71%
(30/42)
Conservative treatment
14%
(7/51)
29%
(15/51)
31%
(16/51)
4%
(2/51)
22%
(11/51)
Surgery

At risk situations

- MCA stroke
- Cerebellar stroke
- Posterior stroke
- Severe (tight) carotid stenosis
- Lacunar stroke

malignant MCA syndrome

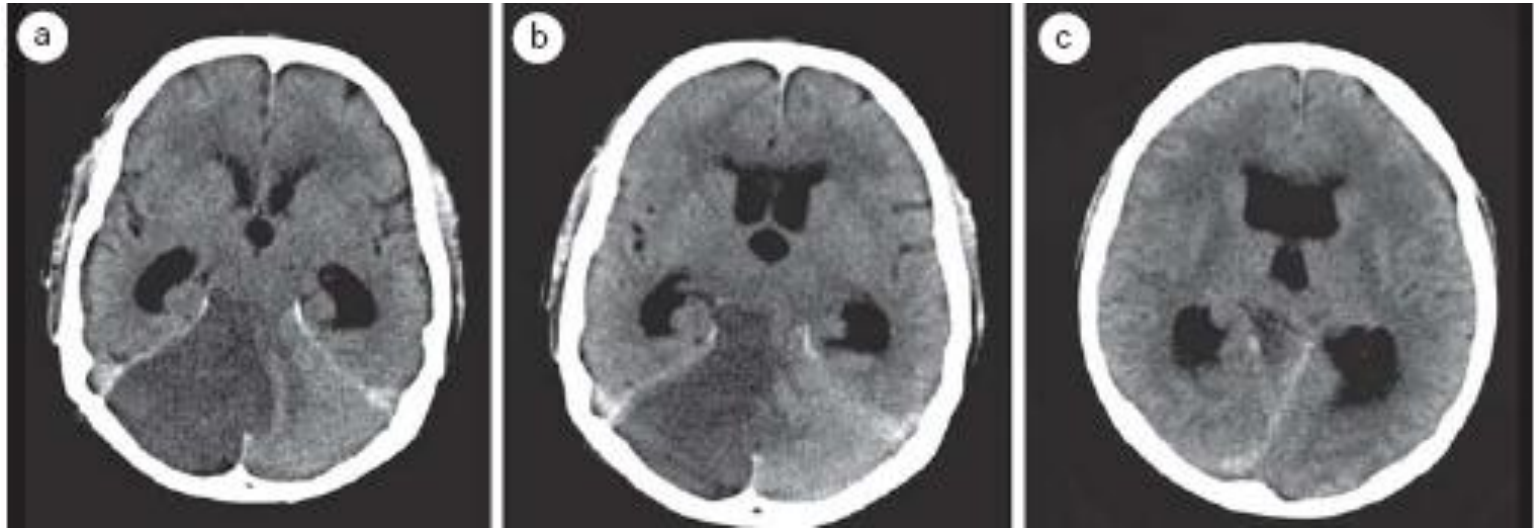
acute hydrocefalus

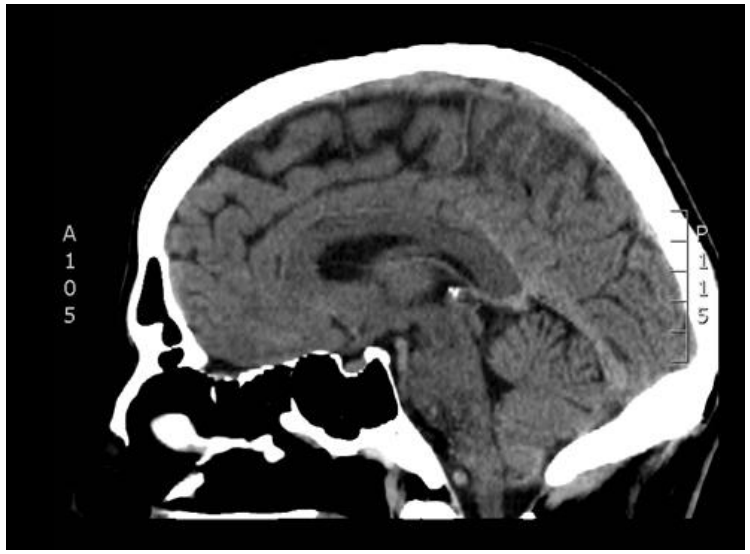
basilar occlusion

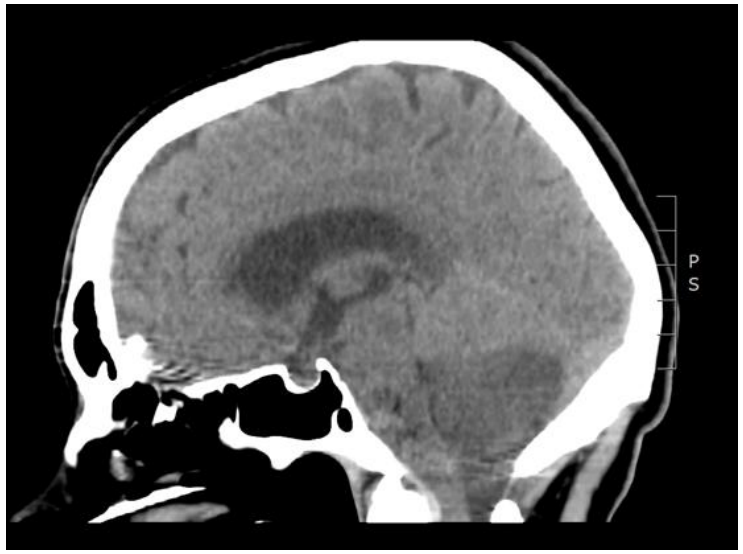
carotid occlusion

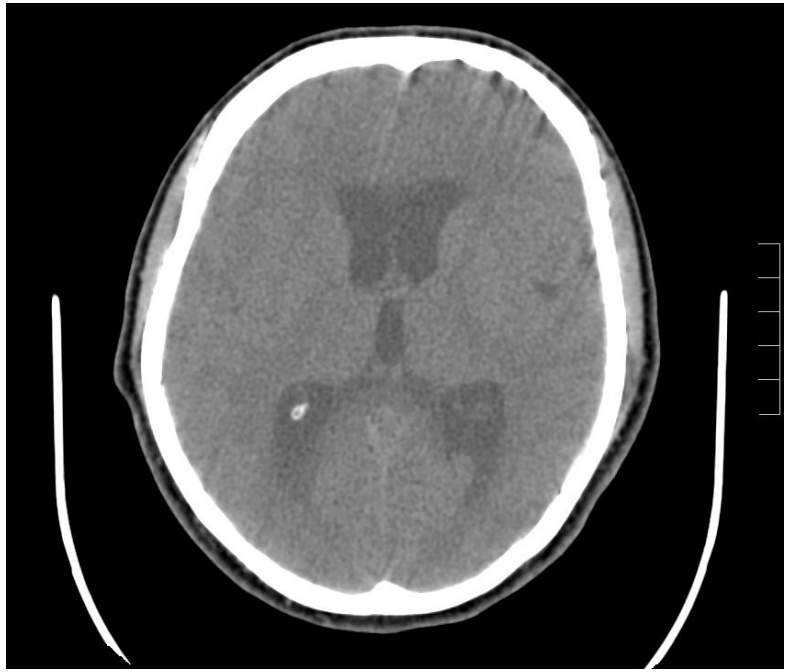
progression of the deficit

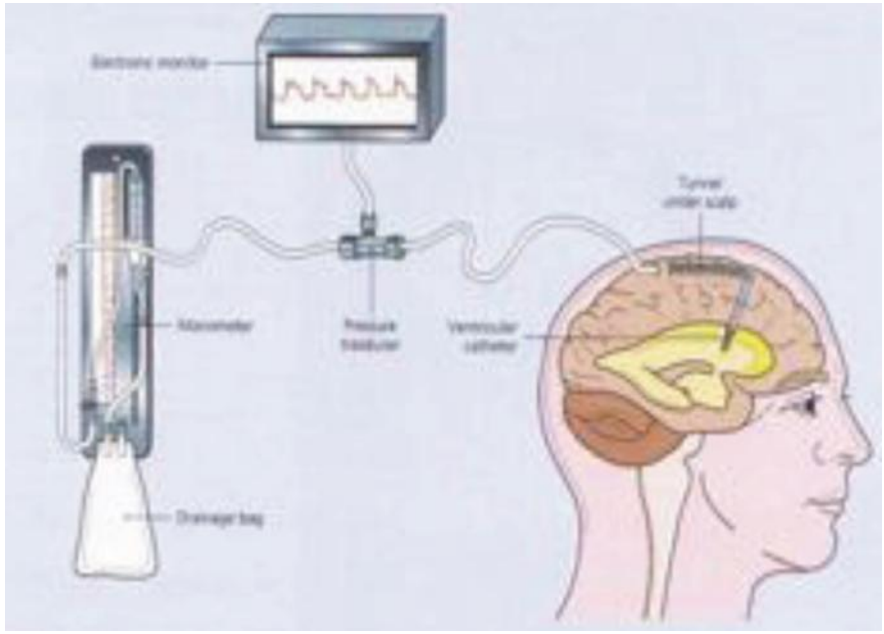
Cerebellar stroke







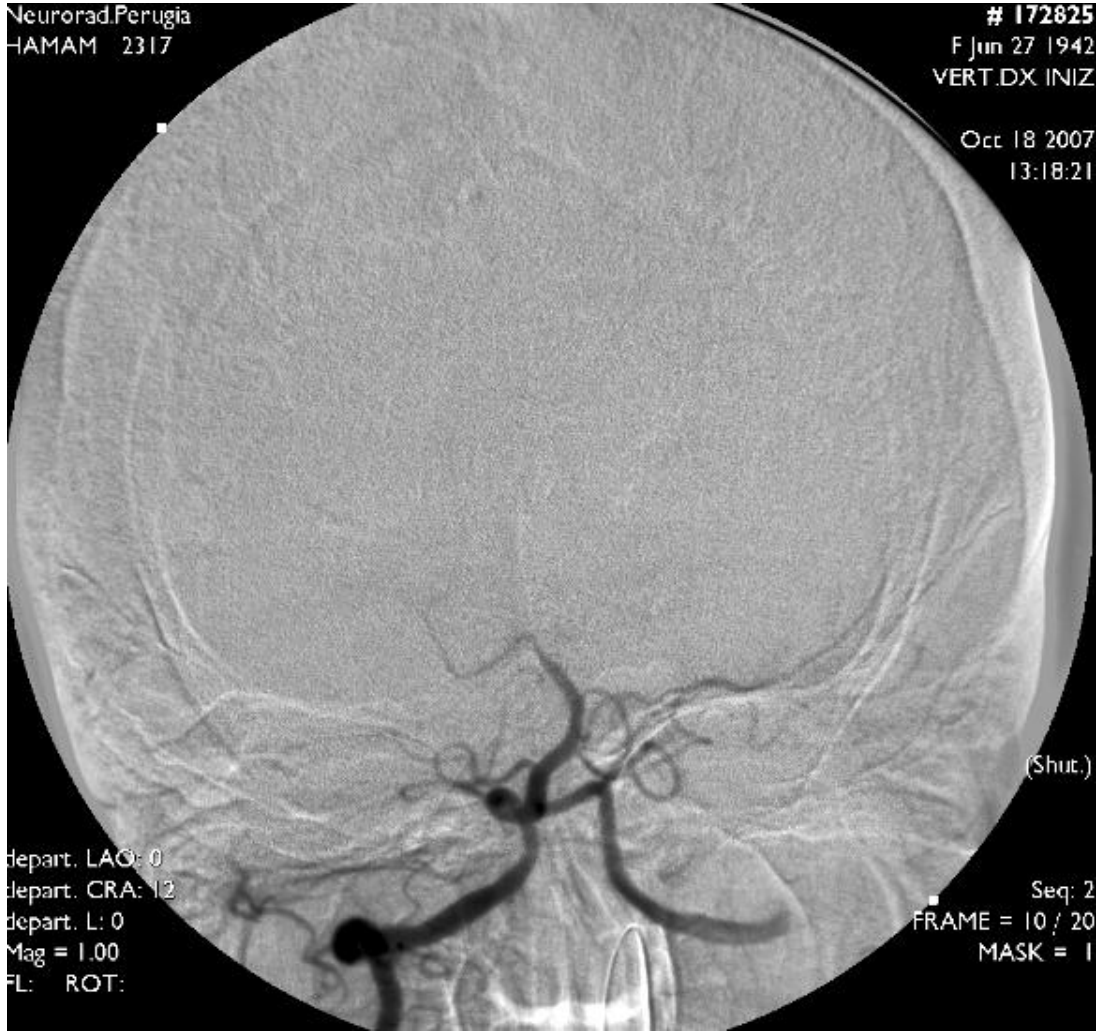



Electronic monitor
Tunnel under scalp
Manometer
Pressure transducer
Ventricular catheter
Drainage bag


A
1
2
2
P
9
8

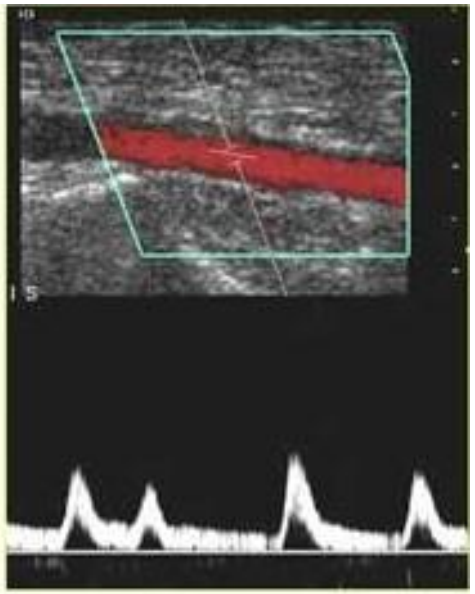

mmHg
cmH2O
CODMAN® EDS 3™

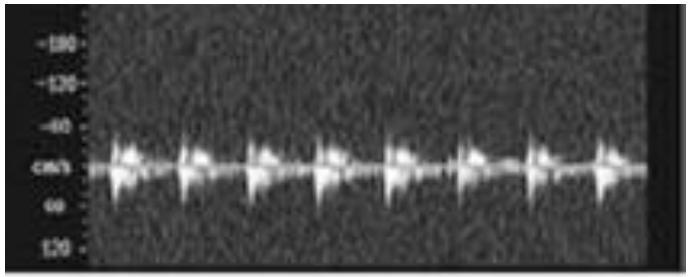
Posterior stroke: basilar occlusion



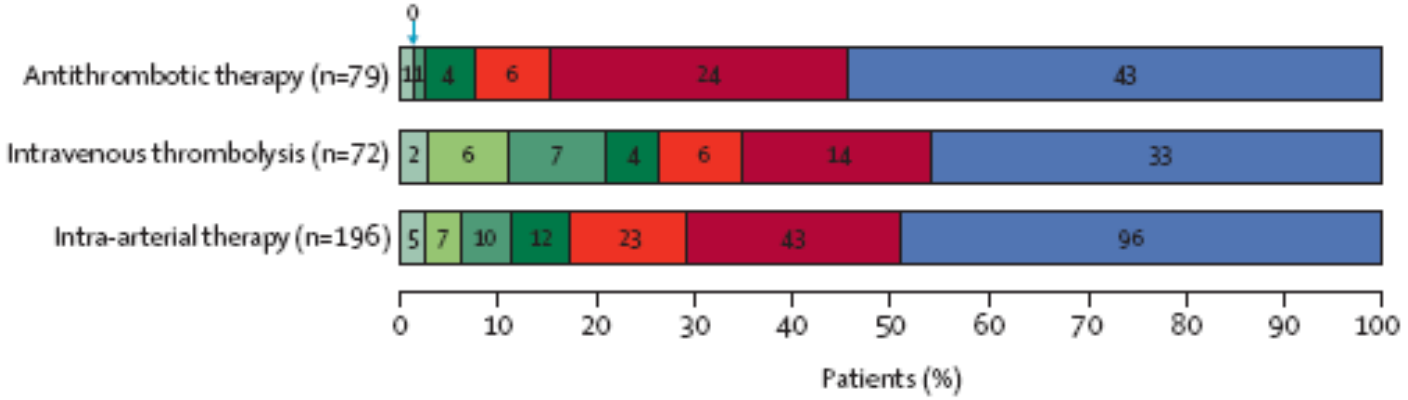
Posterior stroke: basilar occlusion

Ecodoppler vasi epiaortici



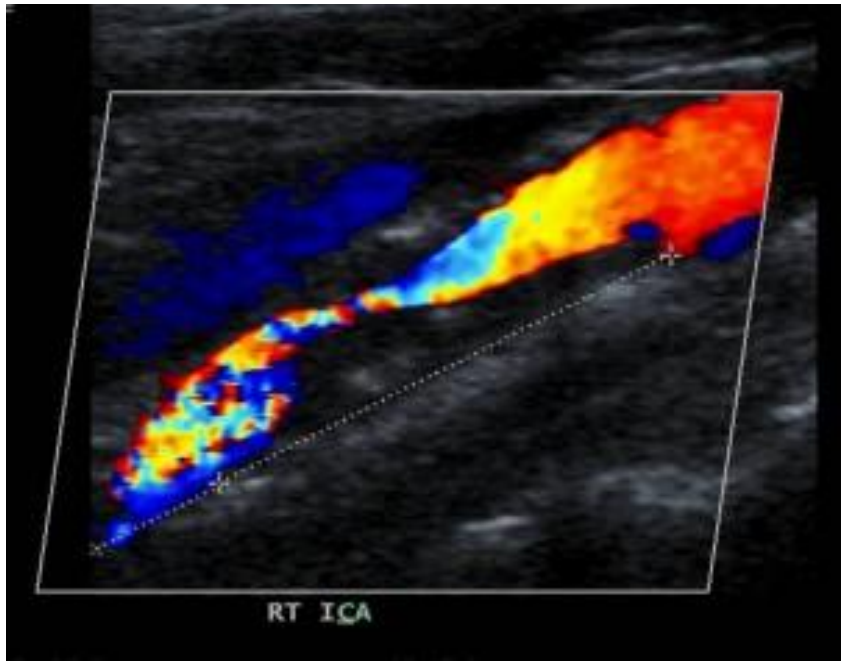


Posterior stroke: basilar occlusion



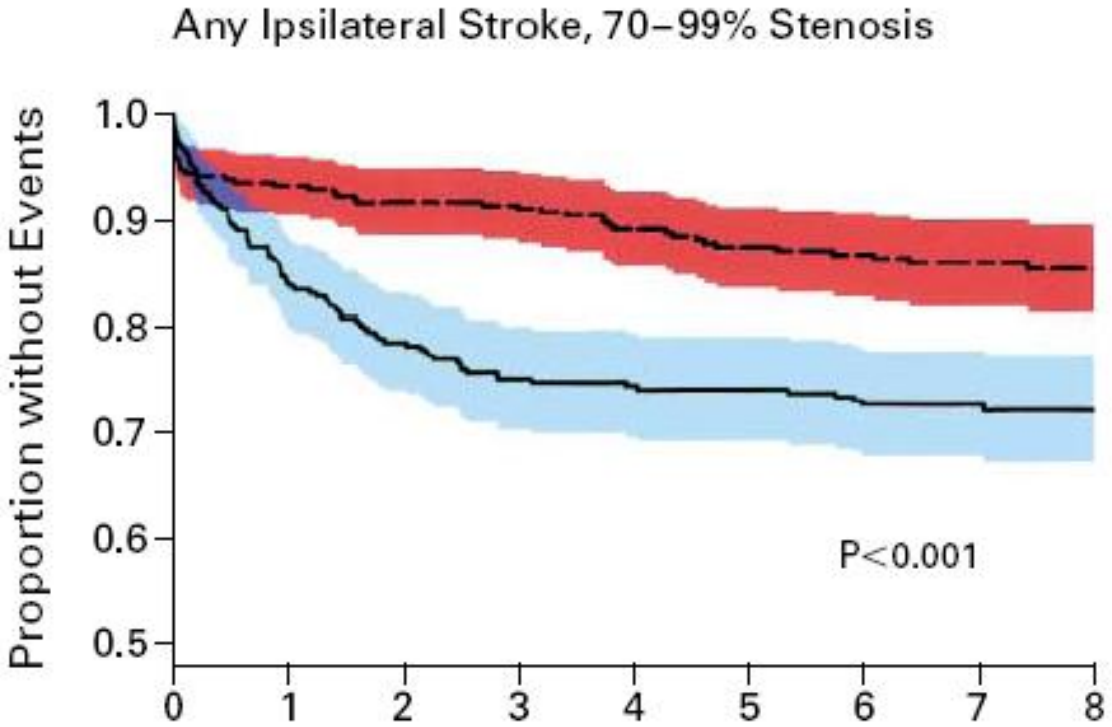
BASICS study group*

Lancet Neurol 2009; 8: 724–30



Stenosi carotide interna destra >70%

Severe (tight) carotid stenosis
Benefit Of Carotid Endarterectomy In Patients With Symptomatic Severe Stenosis



Barnett et al, NEJM 1991

Endarterectomy for symptomatic carotid stenosis in relation to clinical subgroups and timing of surgery

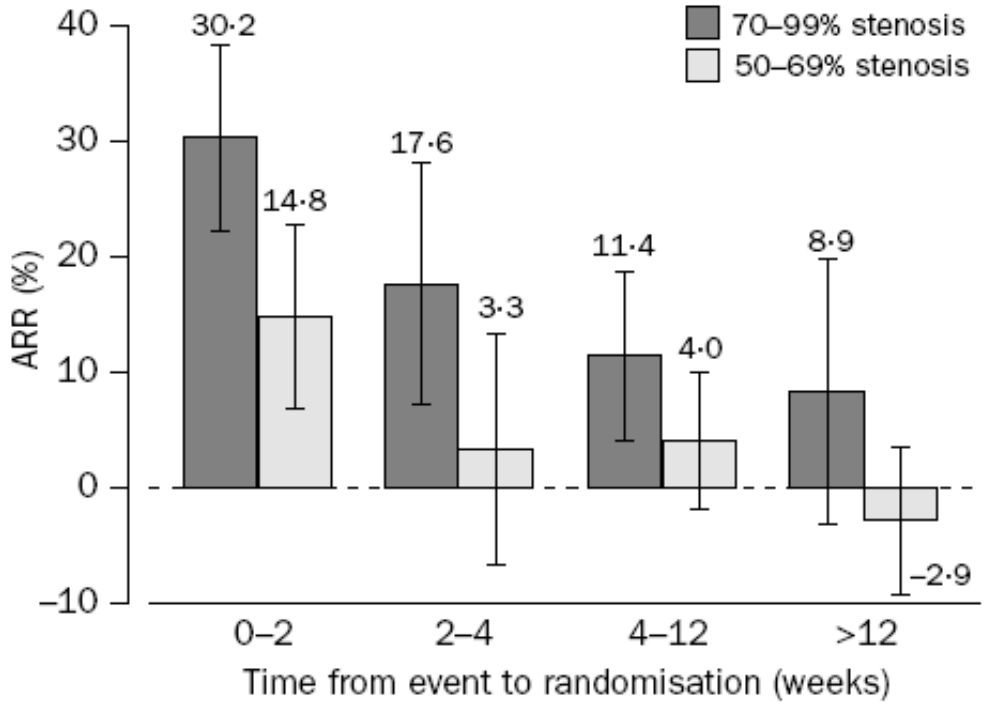
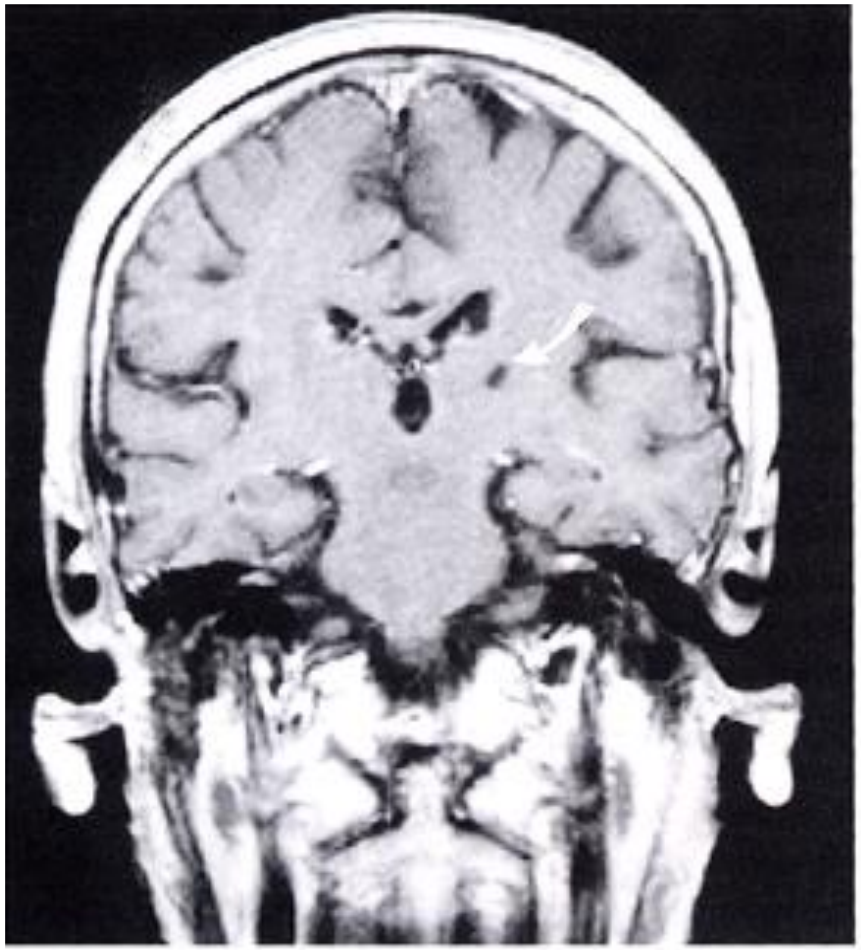


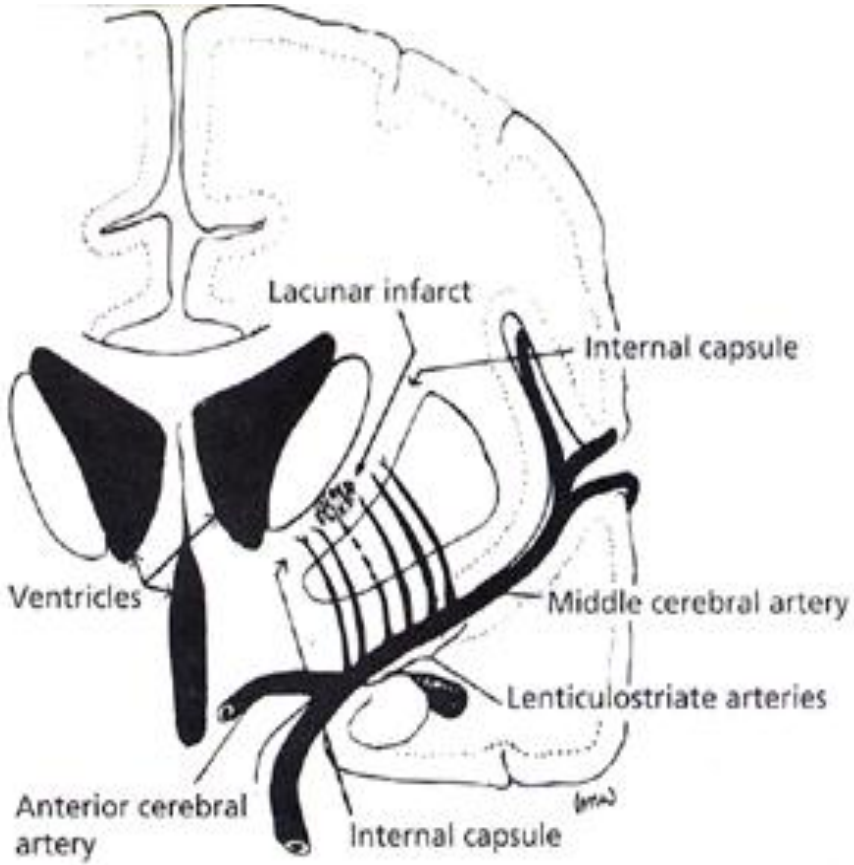
Figure 5: **Absolute reduction with surgery in the 5-year cumulative risk of ipsilateral carotid ischaemic stroke and any stroke or death within 30 days after trial surgery in patients with 50–69% stenosis and ⩾70% stenosis without near-occlusion stratified by the time from last symptomatic event to randomisation**

Numbers above bars indicate actual absolute risk reduction. Vertical bars are 95% CIs.

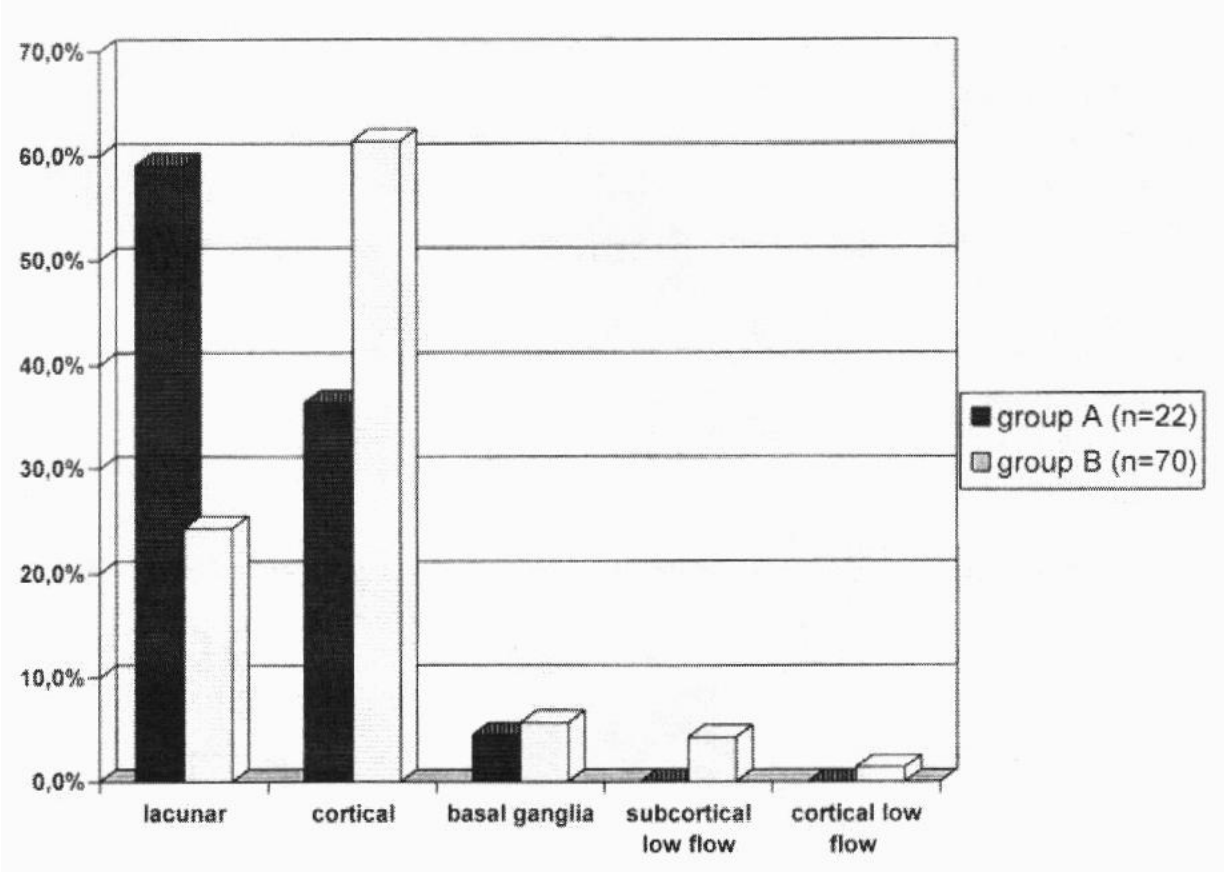
Lancet 2004; **363:** 915–24

Lacunar stroke





Lacunar stroke



Group A: with progressive motor deficit
Group B: without progressive motor deficit

Stroke 2002; 33: 1510-1516

In all other cases without a sure underlying mechanism?

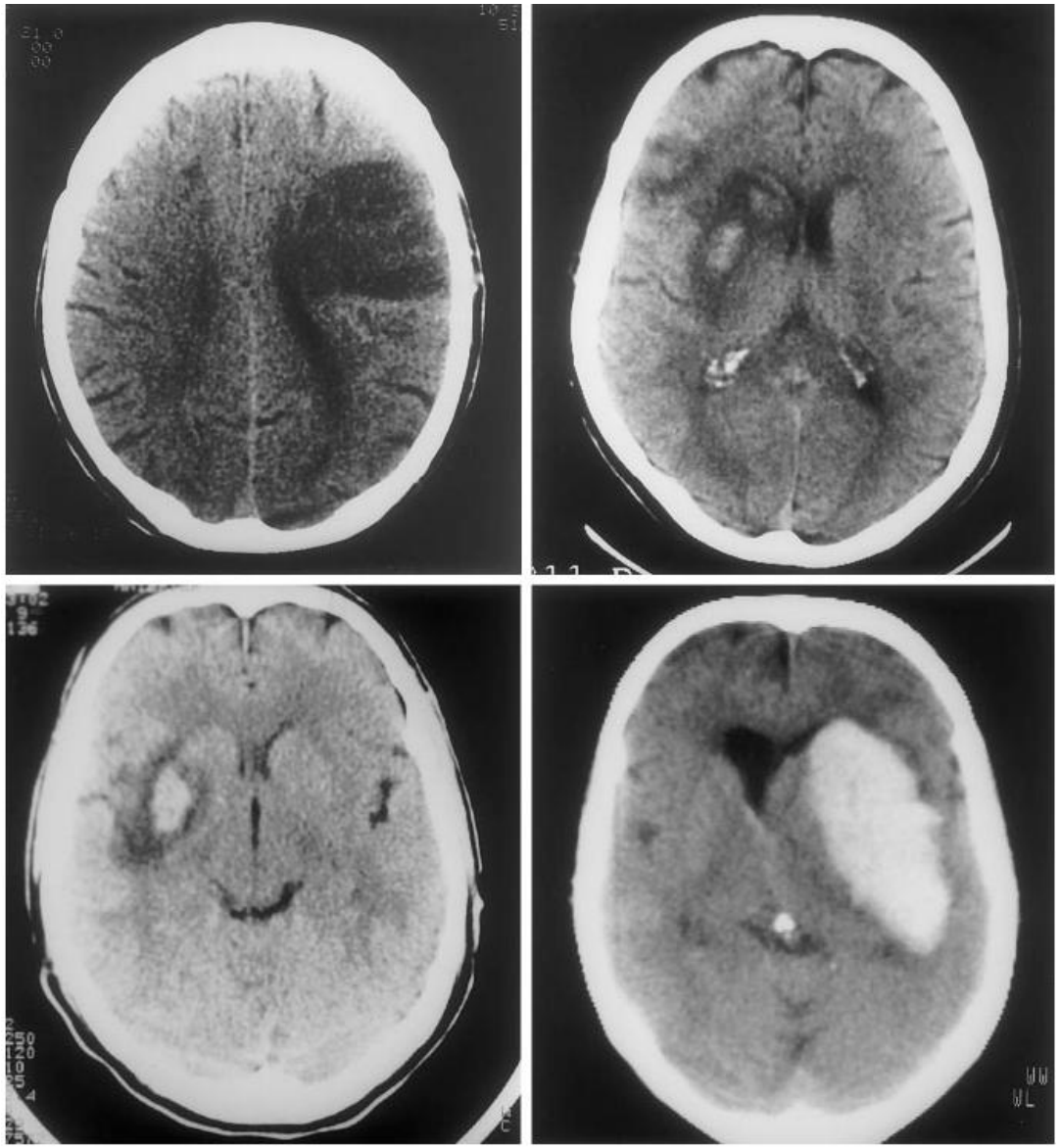
Heparin

- Urgent anticoagulation with the goal of preventing early recurrent stroke, halting neurological worsening, or improving outcomes after acute ischemic stroke is not recommended for treatment of patients with acute ischemic stroke

Other dangerous conditions

- Hemorrhagic transformation
- Epileptic activity

Hemorrhagic transformation
Definitions:



HI-1 or HI-2

PH-1 or PH-2

Hemorrhagic transformation

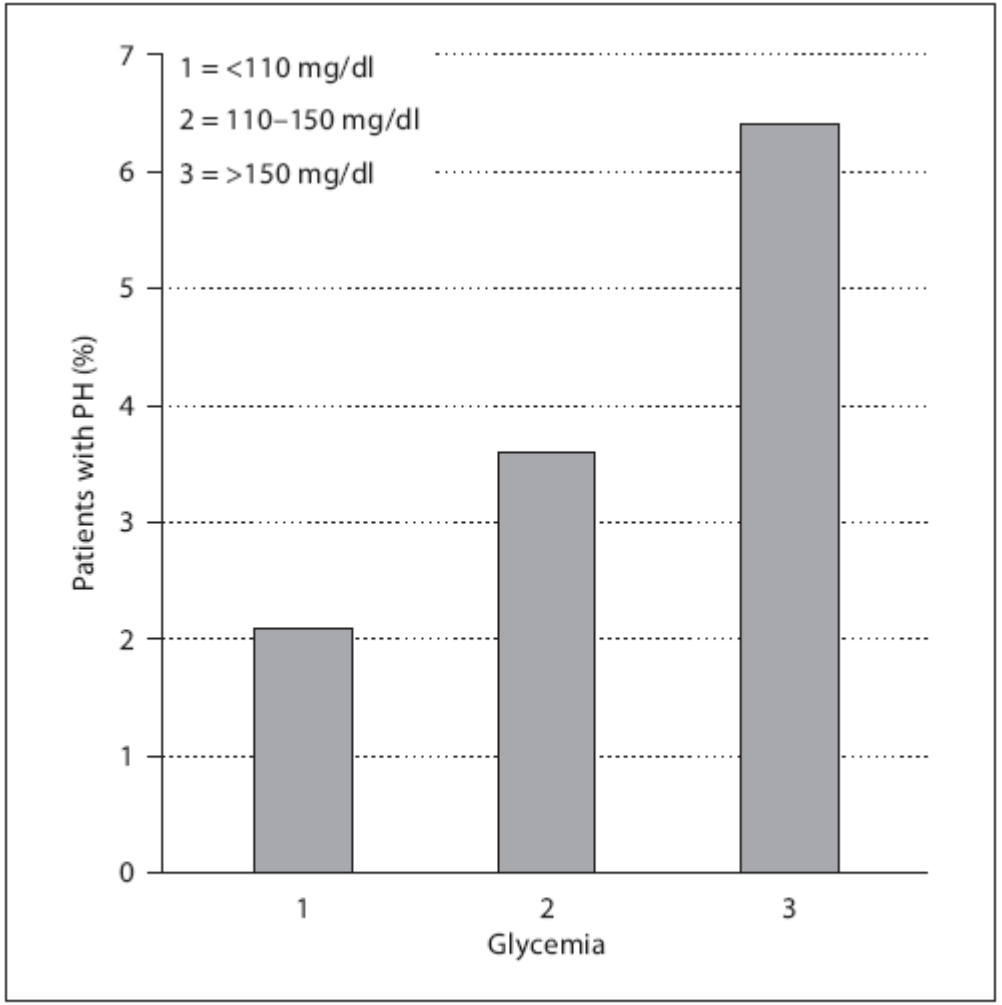
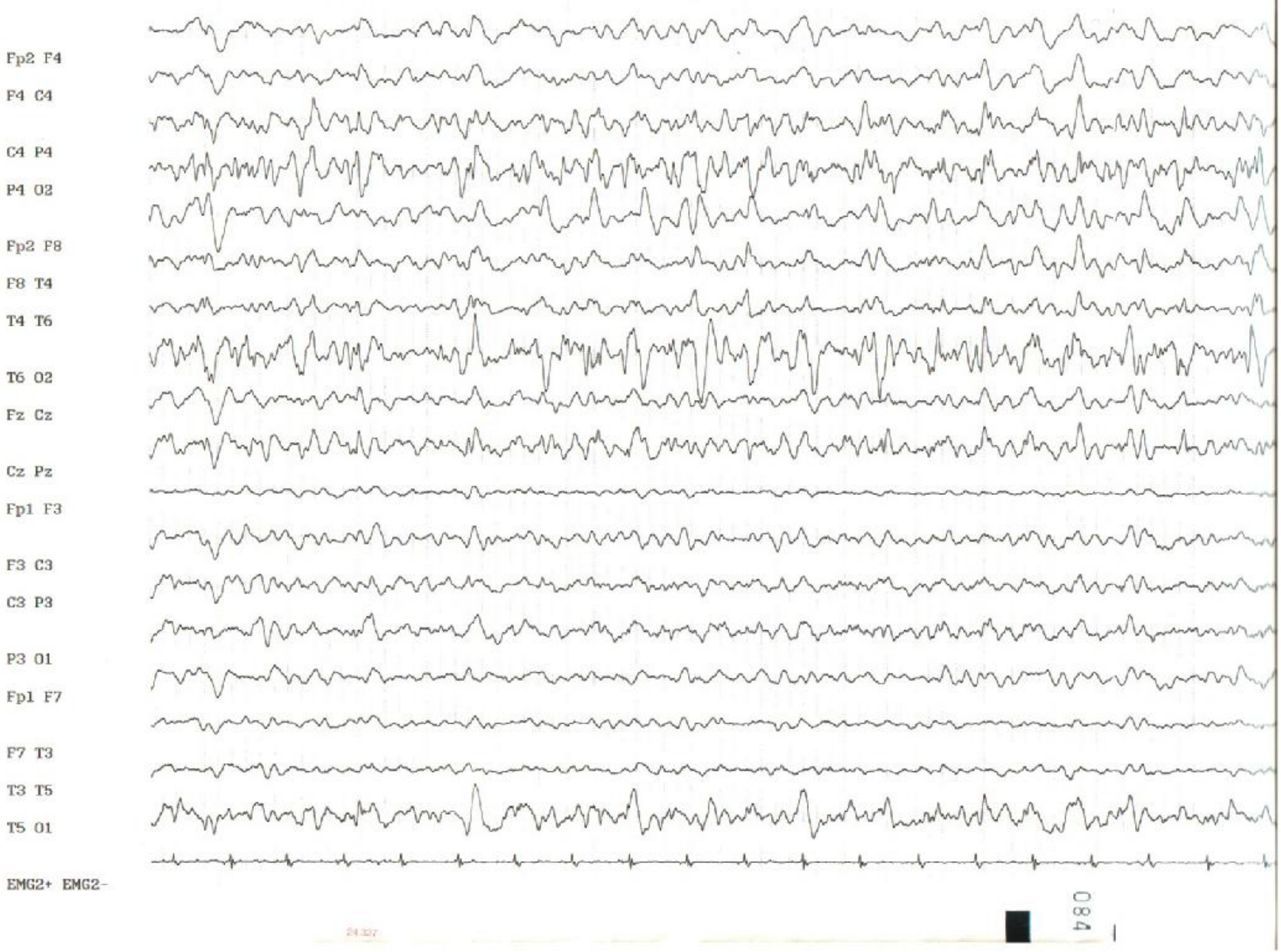


Fig. 1. Rates of PH and baseline serum glucose levels.

Paciaroni et al. Cerebrovasc Dis 2009; 28: 119-123

Filtro PA : 1.0 Hz Filtro PB : 20.0 Hz Ampiezza EEG 100 microVolt/cm Notch: si



Complicanze tardive

Prevenzione e trattamento del tromboembolismo venoso

Epidemiology

Factors increasing the risk of VTE after stroke.
Neurological factors:

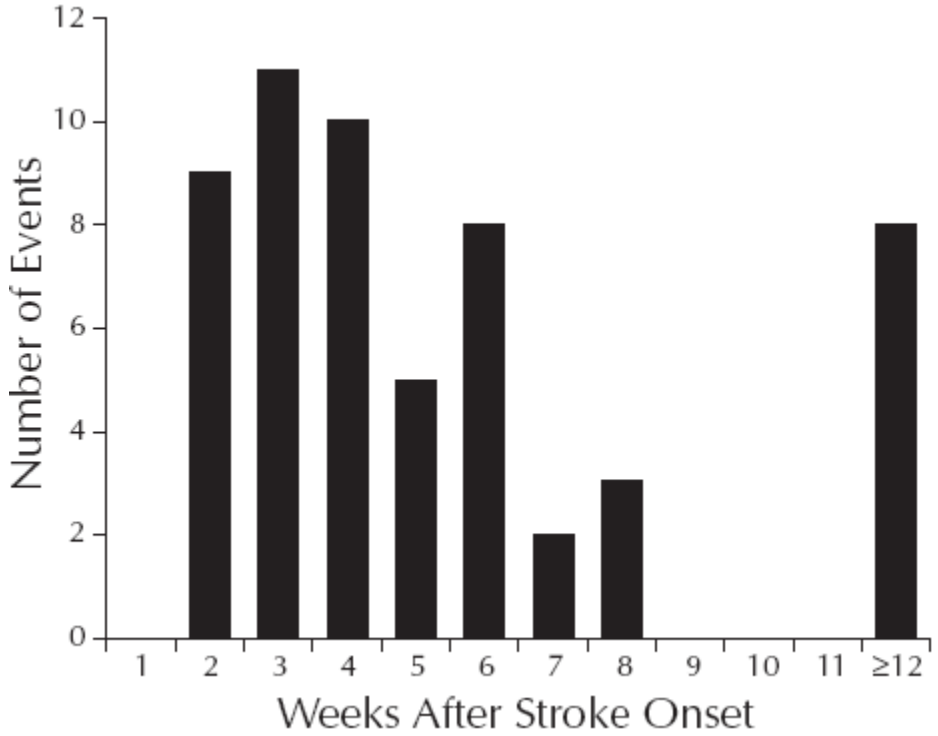
- Any reduction in mobility
- Paretic lower limb
- Increasing stroke severity
- Hemorrhagic stroke

Epidemiology

Factors increasing the risk of VTE after stroke.
Systemic conditions:

- Previous VTE
- Increasing age
- Known disseminated malignancy
- Congestive heart failure
- Obesity
- Pro-thrombotic status
- Dehydration during hospitalization

Epidemiology



DVT or PE prophylaxis

- Graduated compression stockings
- Intermittent pneumatic compression
- Anticoagulants:
  - UFH
  - LMWH
  - Vit. K antagonists
  - Direct Thrombin inhibitors
  - Direct Factor Xa Inhibitors

DVT or PE prophylaxis

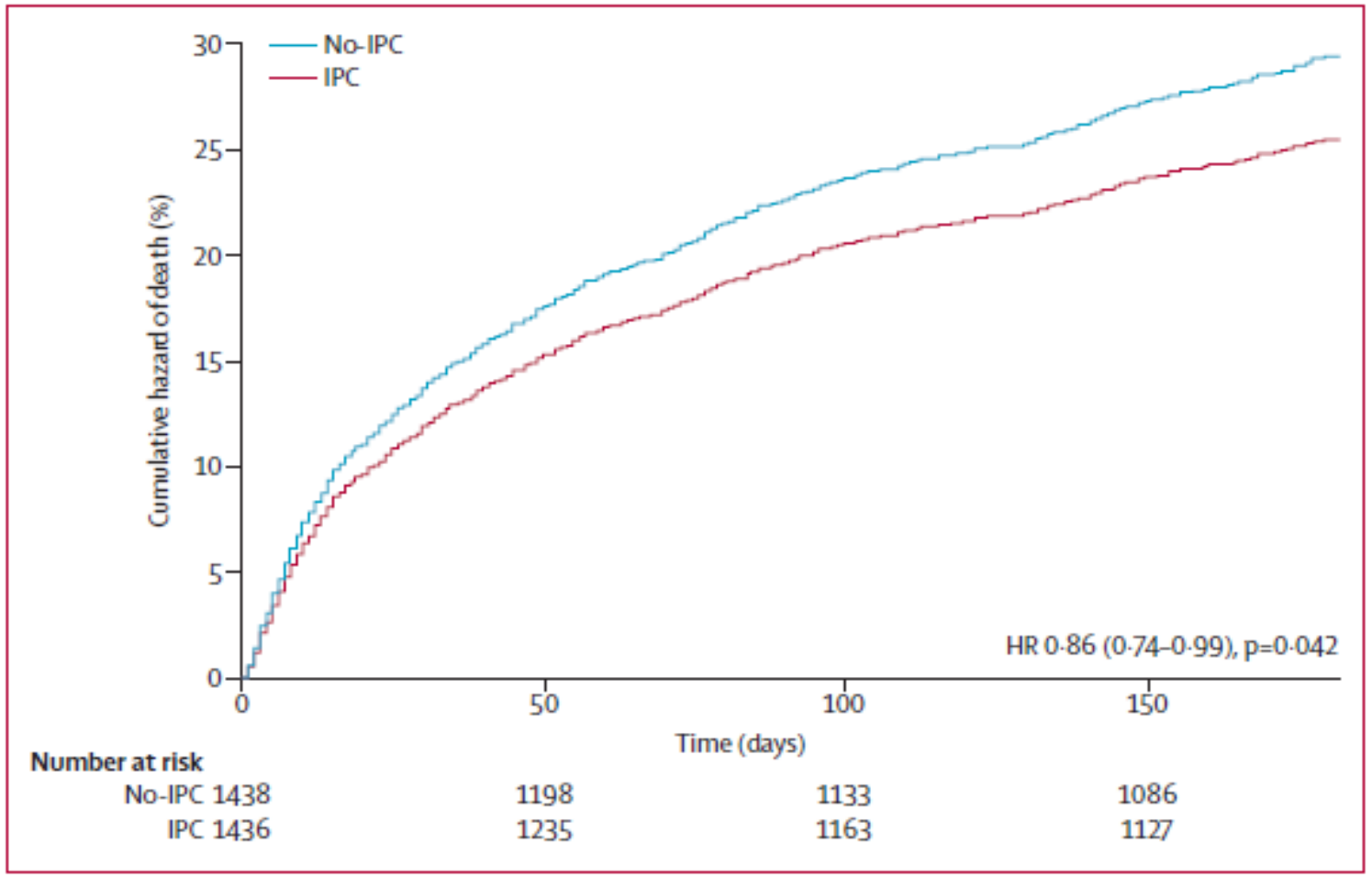


Figure 3: Cumulative hazard of death during the 6 months after randomisation in the two treatment groups

DVT or PE prophylaxis

Profilassi farmacologica

- Enoxaparina 0,4 ml sottocute al giorno
- Da iniziare dopo la 2° TC encefalo per escludere trasformazione emorragica
- Doppler venoso sempre a 7 giorni

Inferior Vena Cava Filter Placement

- Associated with short- and long-term risks:

  - Thrombosis at the insertion site (23-36%)
  - Migration, tilting or fracture of filter
  - Perforation of the small bowel, ureter and retroperitoneal hematoma
  - Small bowel obstruction
  - Filter migration into the heart or pulmonary arteries
  - Phlegmania cerulea dolens

- Not address propagating thrombus load, so anticoagulants may subsequently be required in a substantial proportion of patients (Tardy, 1996).

- No randomized studies

Non-neurological complications of acute stroke: frequency and influence on clinical outcome

Andrea Alberti · Giancarlo Agnelli · Valeria Caso · Michele Venti · Monica Acciarresi · Cataldo D'Amore · Maurizio Paciaroni

Non-neurological complications	
Fever	269 (24.4%)
Myocardial infarction	34 (3.0%)
Pulmonary embolism	16 (1.4%)
Proximal deep venous thrombosis	28 (2.5%)
Distal deep venous thrombosis	56 (5.0%)
Pneumonia	101 (9.1%)
Urinary infections	126 (10.4%)
Infections in other sites	11 (1.0%)

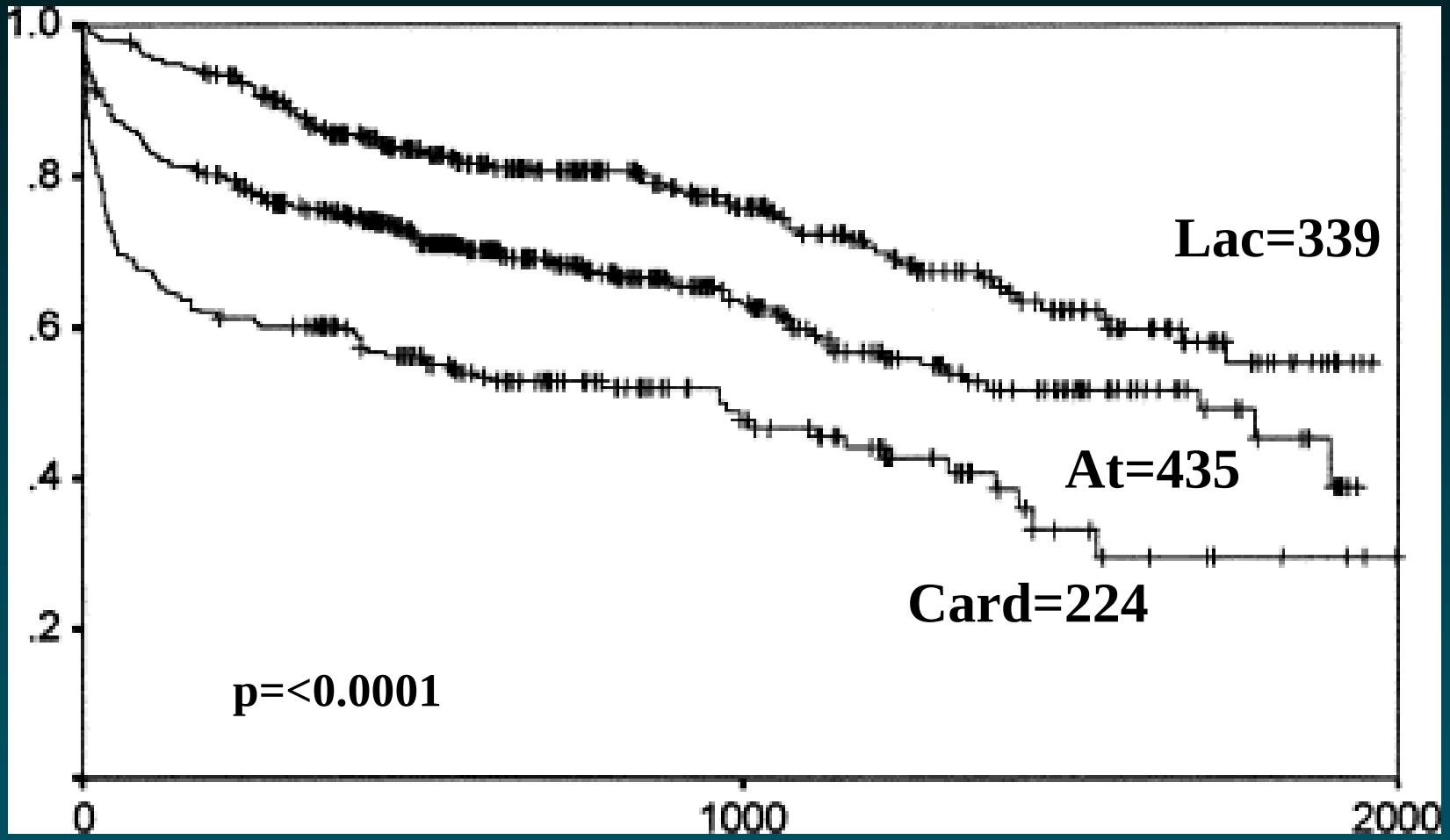
Perugia Stroke Registry

- Tot. 2194 pazienti
- 340 emorragie (15,5%)

- 547 Cardioembolia	25.0%
- AFib 503 (23%)	
- 490 Aterosclerosi	22,3%
- 421 Malattia dei piccoli vasi	19,2%
- 350 Causa indeterminata	15.9%
- 202 Più possibili cause	9,2%
- 184 Altre cause	8,4%

Paciaroni et al 2014, unpublished data

Sopravvivenza dopo primo episodio di ictus in base al sottotipo



Giorni di follow up

De Jong et al J Clin Epidemiol 2003

Sottotipi di ictus ischemico e mortalità

	30 giorni	1 anno	5 anni
Aterotrombotico (%)	8.1	10.8	32.2
Cardioembolico (%)	30.3	53.0	80.4
Lacunare (%)	1.4	6.9	35.1
Criptogenico (%)	14.0	25.6	48.6
p	0.0001	0.0001	0.0001

Petty et al, Stroke 2000

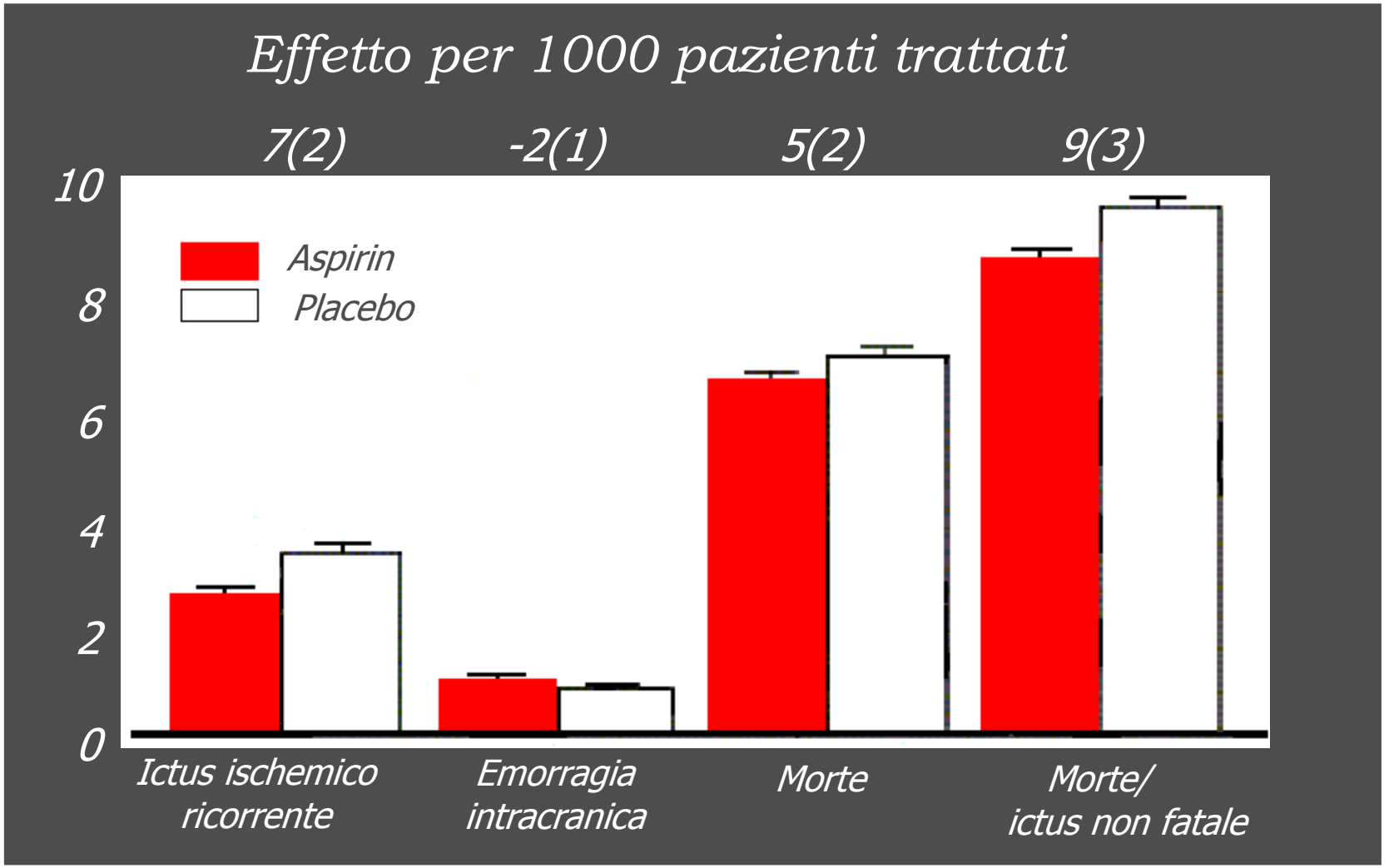
Paziente classico

- Maschio
- 72 anni

- Ipertensione arteriosa
- Fumatore

- Emiparesi sinistra (FR 4/5 sia all'arto superiore che all'arto inferiore) con disturbi sensitivi
- NIHSS=9

Profilassi secondaria precoce: Aspirina



The Lancet, 1997

Protocollo diagnostico per definire l'eziologia dello stroke

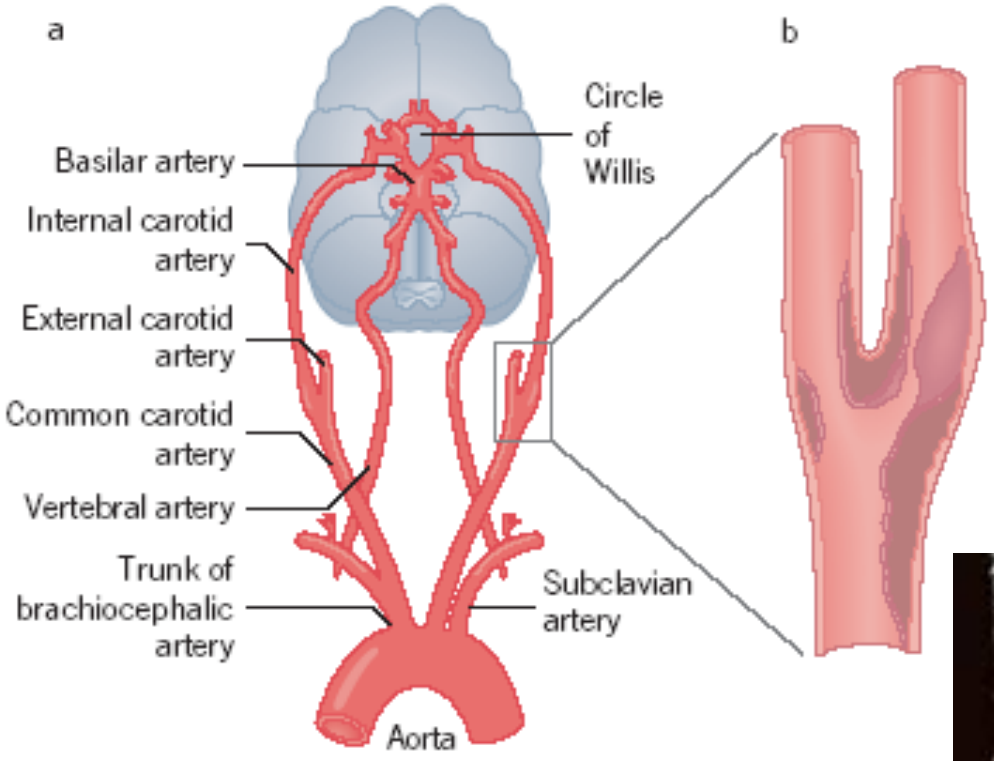
Esami di primo livello:

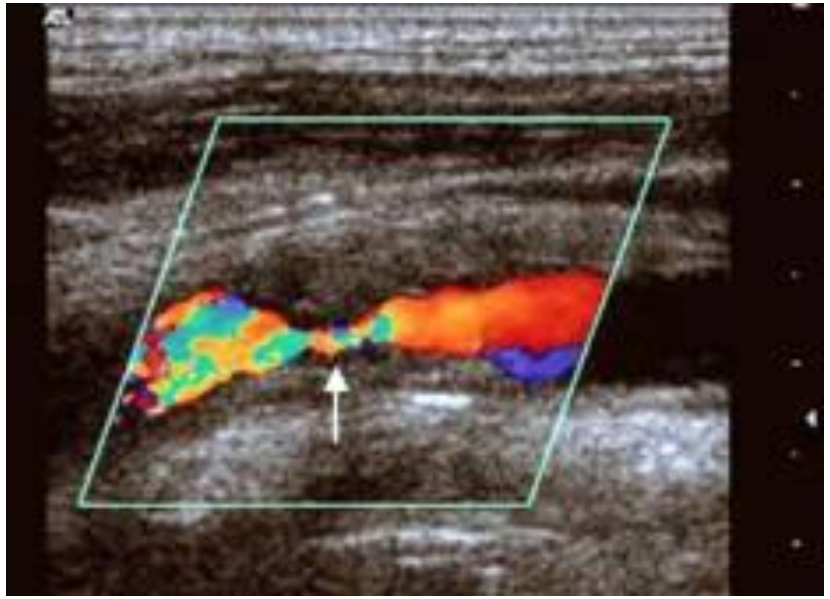
- Anamnesi (fattori di rischio) ed esame clinico
- Esami di laboratorio (profilo emato-biochimico, enzimi miocardiolisi)
- ECG
- Eco-Doppler vasi epiaortici
- TC encefalo

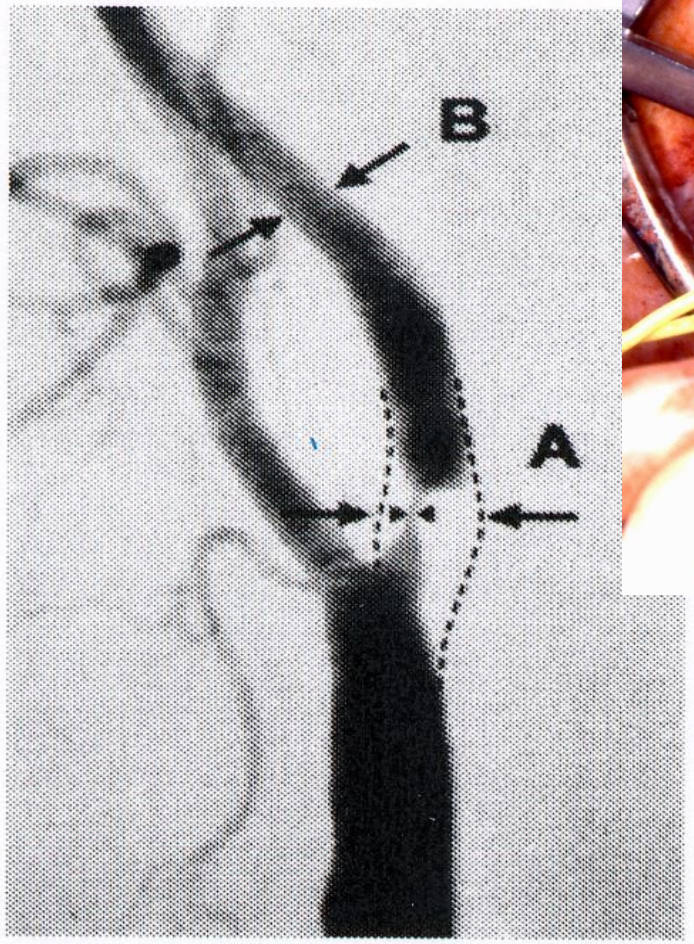
Permettono di fare una diagnosi eziologica nel 50-55% dei casi:

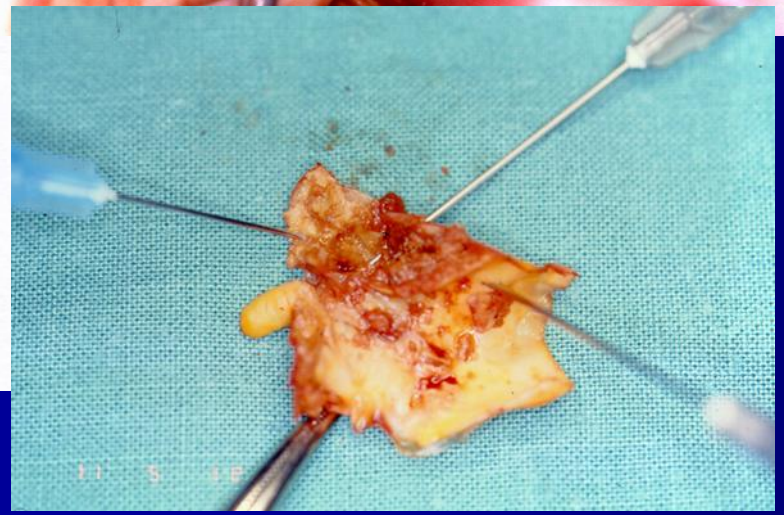
- Aterosclerosi dei vasi epiaortici
- Malattia dei piccoli vasi
- Cardioembolia (FA, IMA acuto)

Aterosclerosi (22%)

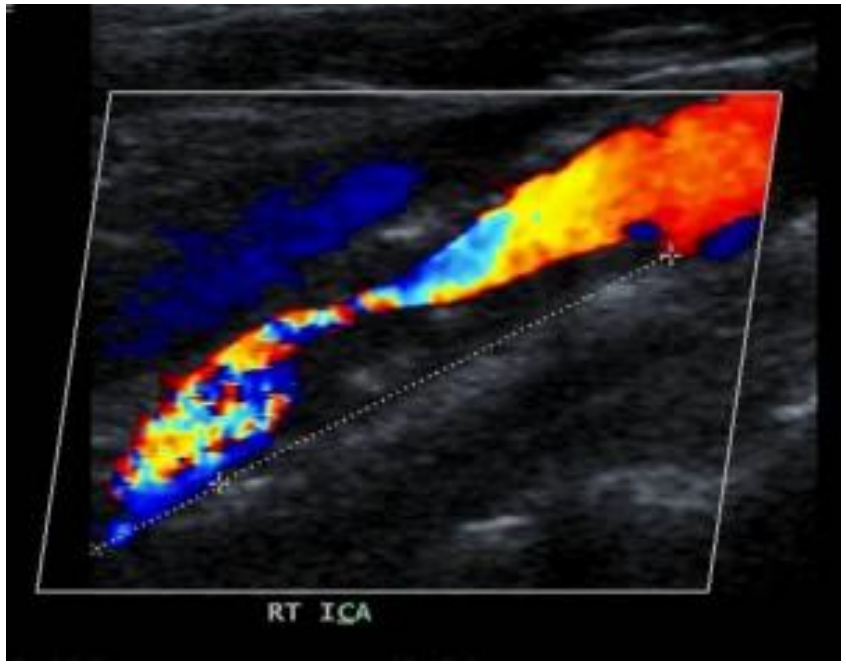





B
A



1° scenario



Stenosi carotide interna destra >70%

CEA vs. Stenting

Study or Subgroup	Endovascular Events	Total	Surgery Events	Total	Weight	Peto Odds Ratio Peto, Fixed, 95% CI	Year
Leicester	5	11	0	12	2.3%	12.88 [1.85, 89.61]	1998
Wallstent	13	107	5	112	9.5%	2.76 [1.05, 7.22]	2001
Kentucky 2001	0	53	1	51	0.6%	0.13 [0.00, 6.56]	2001
CAVATAS-CEA	25	251	25	253	25.8%	1.01 [0.56, 1.81]	2001
EVA-3S	25	265	10	262	18.7%	2.47 [1.24, 4.90]	2006
SPACE	42	607	38	589	42.6%	1.08 [0.68, 1.70]	2006
BACASS	0	10	1	10	0.6%	0.14 [0.00, 6.82]	2006
Total (95% CI)		**1304**		**1289**	**100.0%**	**1.40 [1.04, 1.88]**	
Total events	110		80				

Heterogeneity: $Chi^2 = 14.83$, $df = 6$ ($P = 0.02$); $I^2 = 60\%$

Test for overall effect: $Z = 2.22$ ($P = 0.03$)

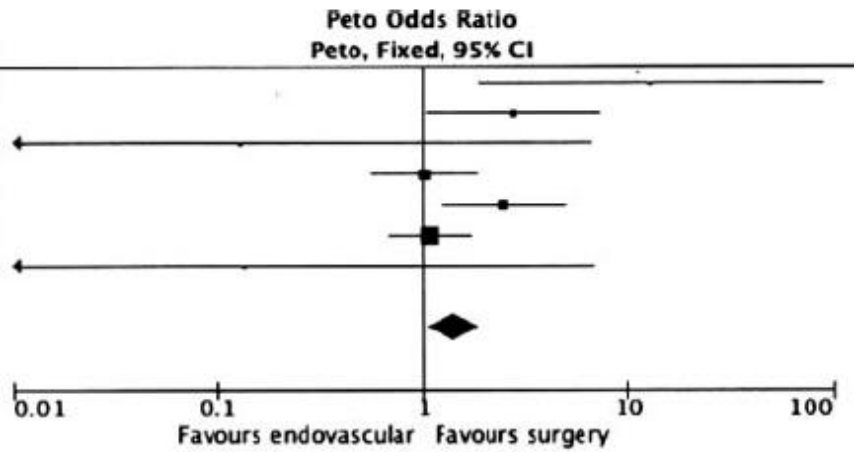


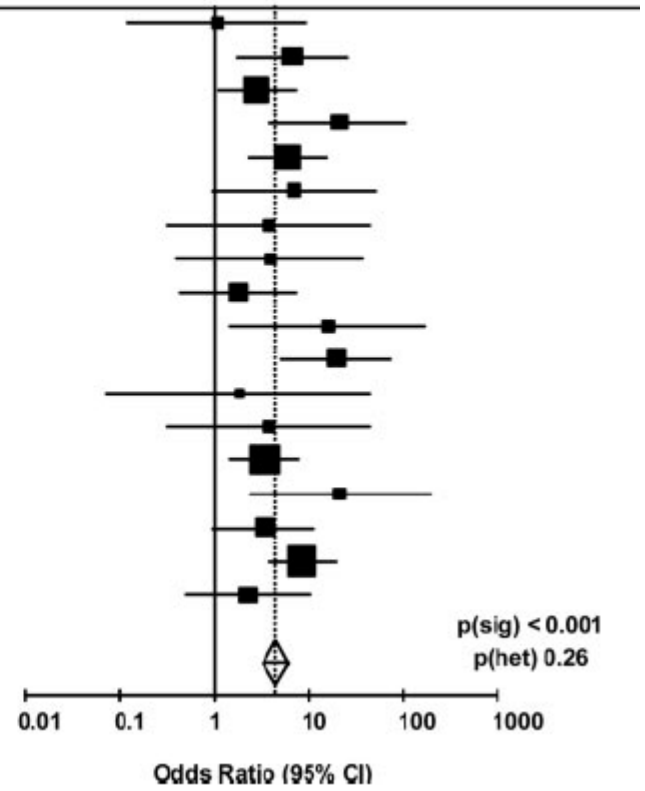
Figure 1. Stroke or death within 30 days of treatment of symptomatic stenosis (fixed effect model).

Ederle et al. Stroke 2009

Quando operare?

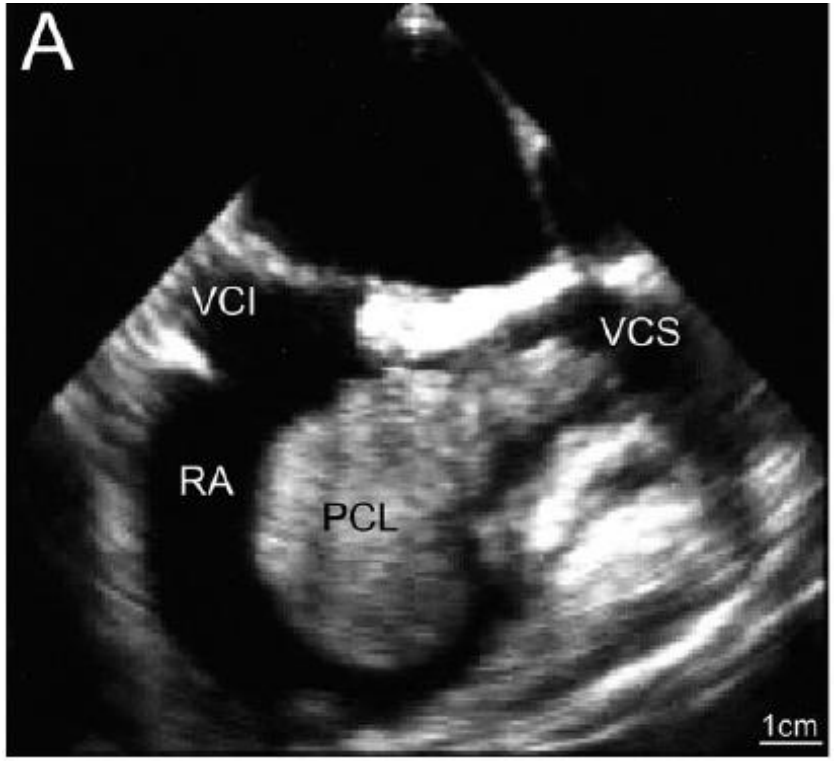
Operative stroke and death after emergency carotid endarterectomy for unstable neurological deficit (crescendo TIA and stroke in evolution) vs nonemergency surgery.

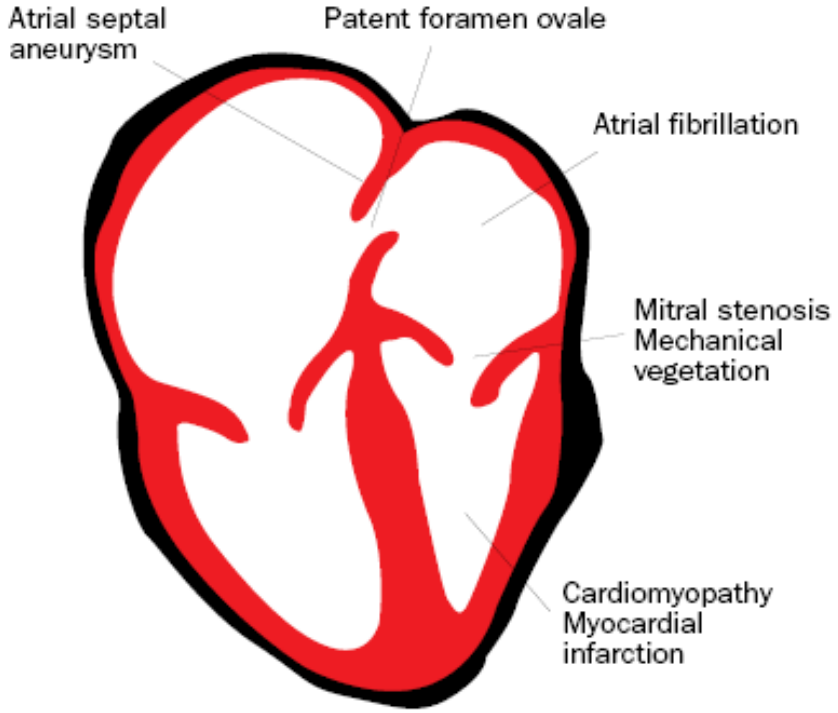
Ref	Study	Emergency Events/ patients	Non emergency Events/ Patients	Odds ratio	95% CI
22	Rosenthal et.al. 1983	1 / 12	10 / 129	1.1	0.1-9.3
23	Ricotta et.al. 1985	5 / 27	5 / 154	6.8	1.8->10
24	Fode et al. 1986	6 / 38	27 / 439	2.9	1.1->10
25	Friedman et.al 1988	4 / 7	8 / 134	21.0	4.0->10
27	Kirschman et.al. 1989	7 / 27	25 / 454	6.0	2.3->10
28	Brooks et.al 1990	2 / 4	32 / 259	7.1	1.0->10
28	McCrory et.al. 1993	1 / 4	4 / 49	3.8	0.3->10
29	Goldstein et.al. 1994	1 / 5	11 / 183	3.9	0.4->10
30	Golledge et.al.1996	3 / 25	9 / 126	1.8	0.4-7.1
31	Mckinsey et.al.1996	1 / 5	5 / 332	16.4	1.5->10
32	Mattos et.al.1998	5 / 9	136 / 2234	19.3	5.1->10
33	Schneider et.al.1999	0 / 43	1 / 237	1.8	0.1->10
34	Tretter et.al.1999	1 / 5	3 / 47	3.7	0.3->10
35	Illig et.al. 2003	9 / 70	23 / 560	3.4	1.5-7.8
36	Dorigo et.al.2007	4 / 70	1 / 352	21.3	2.3->10
37	Karkos et.al.2007	3 / 39	24 / 1000	3.4	1.0->10
38	Goodney et.al.2008	8 / 62	52 / 3030	8.5	3.8->10
20	Halm et.al.2008	2 / 15	167 / 2625	2.3	0.5->10
	Total	**64 / 468**	**544 / 12345**	**4.6**	**3.4-6.3**

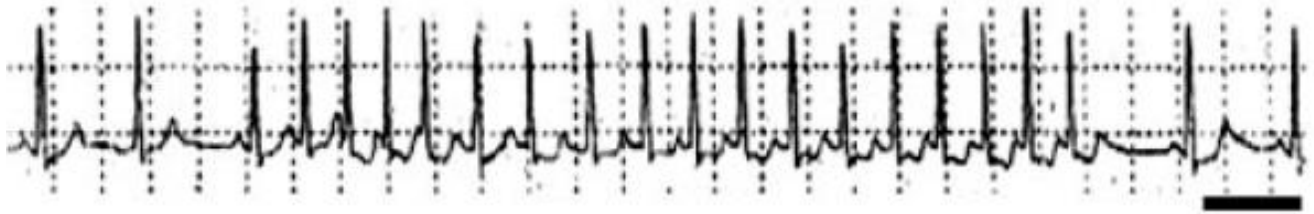


Rerkasem et al, Stroke 2009

Cardioembolia (25%)





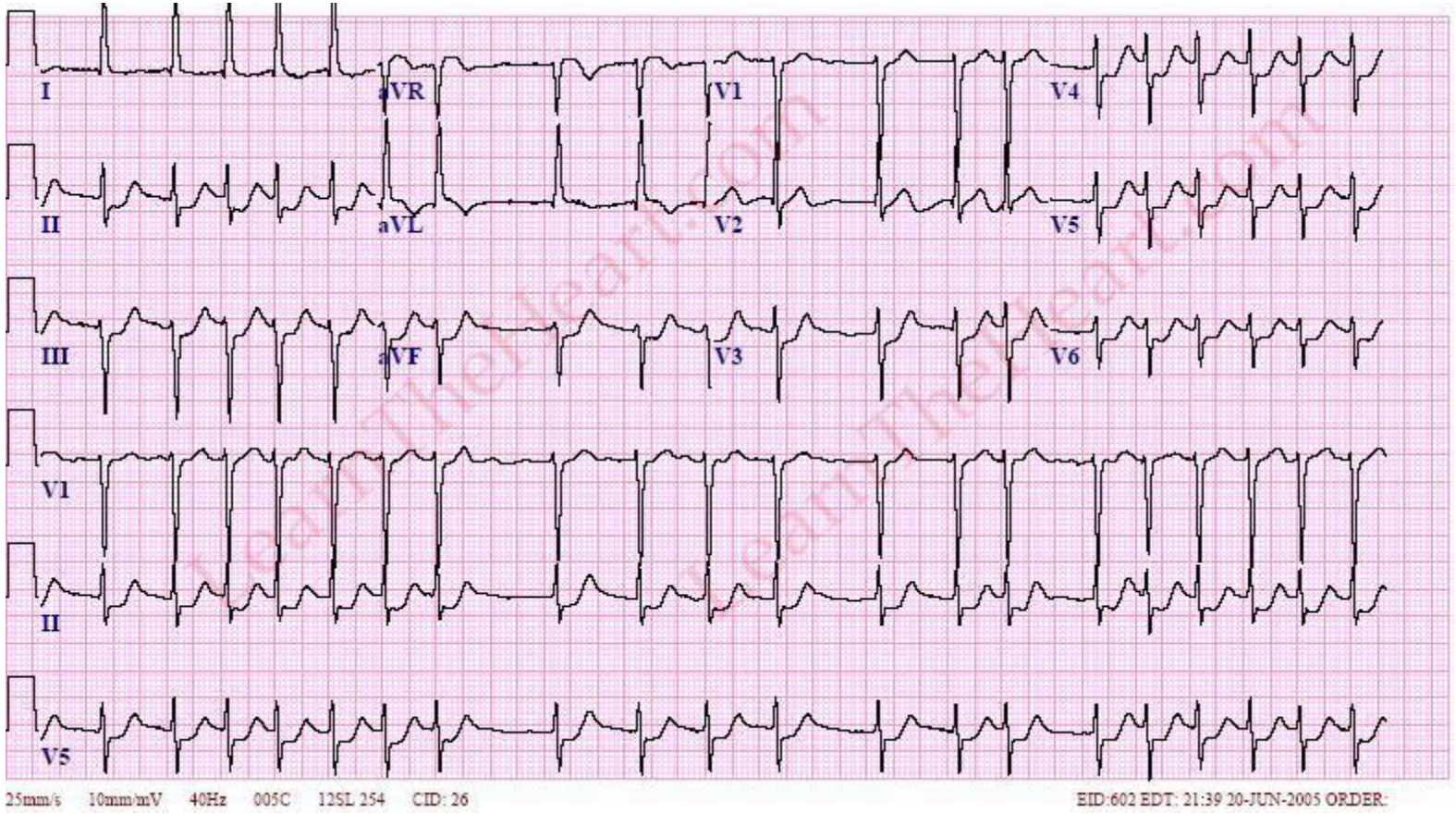


Embolismo cardiaco

- Chiara associazione tra patologie cardiache potenzialmente emboligene e rischio di stroke o TIA

- Le patologie più frequenti sono:
  - fibrillazione atriale (reumatica e non)
  - endocardite infettiva
  - protesi valvolari
  - recente infarto del miocardio
  - cardiomiopatia dilatativa
  - tumori intracardiaci
  - stenosi mitralica reumatica
  - forame ovale pervio

2° scenario



ECG: fibrillazione atriale ad alta risposta ventricolare

Profilassi secondaria nello stroke dovuto a cardioembolismo
Fibrillazione atriale

RRR per recidiva di stroke:

- Warfarin vs placebo 68%
- Aspirina vs placebo 22%
- Warfarin vs aspirina (325mg) 36-47%

INR: 2.0-3.0

Emorragie maggiori per anno:

- Warfarin 1.3%
- Placebo 1.0%

Nuovi anticoagulanti orali
Indicazione: fibrillazione atriale non valvolare

- Apixaban
- Dabigatran
- Edoxaban
- Rivaroxaban

CARATTERISTICHE	WARFARIN	RIVAROXABAN	APIXABAN	DABIGATRAN
Meccanismo d'azione	Riduzione sintesi fattori coagulaz. vit.-K dipendenti	Inibizione diretta fattore Xa	Inibizione diretta fattore Xa	Inibizione diretta trombina
Profarmaco	No	No	No	Si
Biodisponibilità	100%	60-80%*	60%	6%
Somministrazione	una volta/die	una volta/die	due volte/die	due volte/die
Tempo effetto max	4-5 giorni	2-4 ore	1-2 ore	1-3 ore
Emivita	40 ore	7-11 ore	12 ore	15 ore
Clearance renale	Nessuna	33%	25%	80%
Monitoraggio	Si	No	No	No
Interazioni	Molteplici	Citocr. P 450 3A4 Glicoproteina-P	Citocr. P 450 3A4 Glicoproteina-P	Glicoproteina-P

Overview of the New Anticoagulants for Atrial Fibrillation Comparison with Warfarin

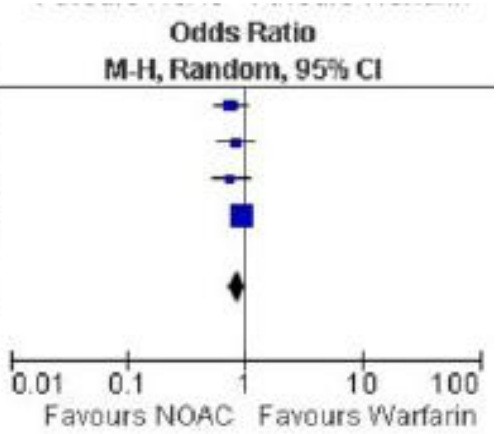
	Stroke/Emb	**ICH**	**Mortality**	**Major Bleed**
Dabigatran 150bid	Superior	Superior	HR 0.88 (0.051)	Equivalent
Dabigatran 110 bid	Non-Inferior	Superior	HR 0.91 (NS)	Superior
Rivaroxaban 20 qd	Non-Inferior	Superior	HR 0.92 (NS)	Equivalent
Apixiban 5 bid	Superior	Superior	HR 0.89 (0.047)	Superior

Prevenzione secondaria.
Endpoint: Stroke e embolismo sistemico

Study or Subgroup	NOAC Events	Total	Warfarin Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
ARISTOTLE 2012	73	1694	98	1742	21.8%	0.76 [0.55, 1.03]
RE-LY Dabigatran 110 2010	55	1195	65	1195	15.5%	0.84 [0.58, 1.21]
RE-LY Dabigatran 150 2010	51	1233	65	1195	14.9%	0.75 [0.52, 1.09]
ROCKET-AF 2012	179	3754	187	3714	47.7%	0.94 [0.77, 1.17]
Total (95% CI)		**7876**		**7846**	**100.0%**	**0.85 [0.74, 0.99]**
Total events	358		415			

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 1.95$, $df = 3$ ($P = 0.58$); $I^2 = 0\%$

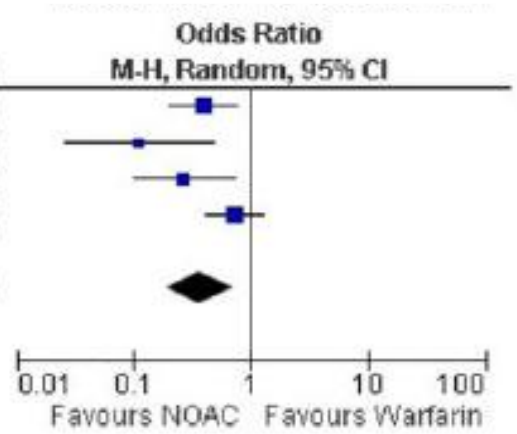
Test for overall effect: $Z = 2.14$ ($P = 0.03$)



Prevenzione secondaria.
Endpoint: Stroke emorragico

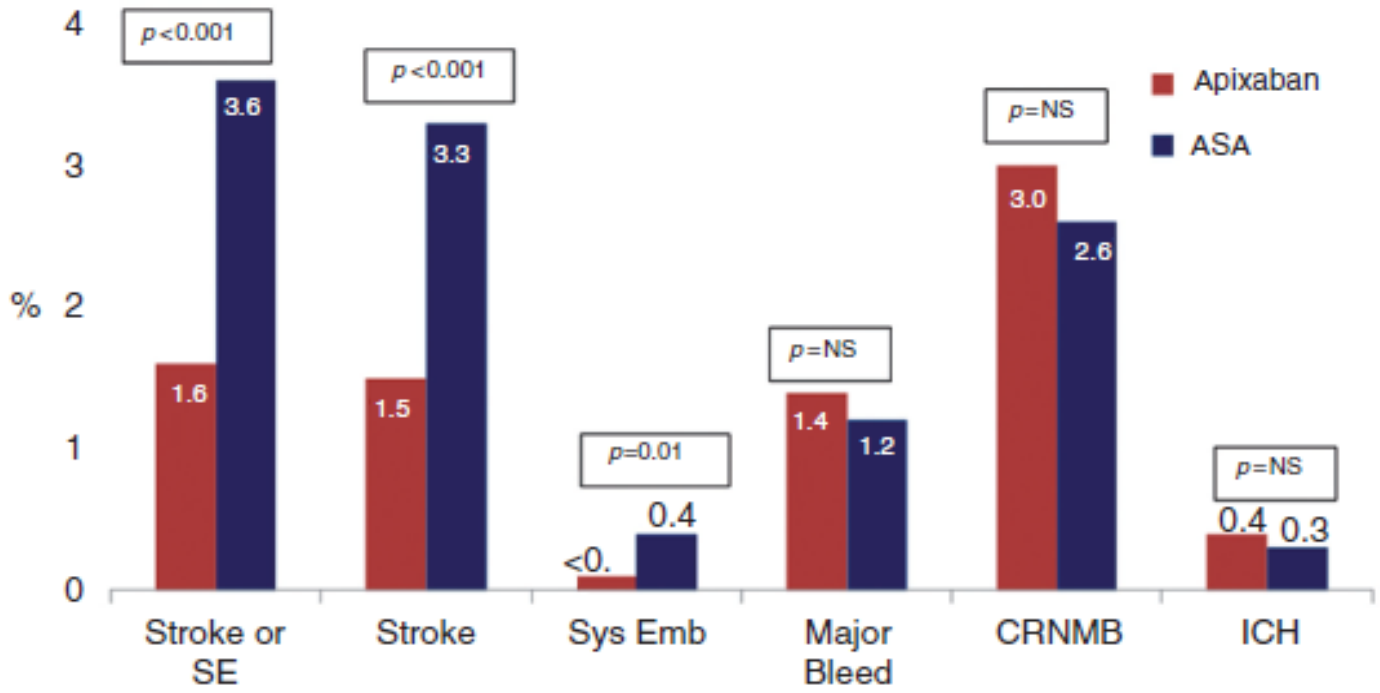
Study or Subgroup	NOAC Events	NOAC Total	Warfarin Events	Warfarin Total	Weight	Odds Ratio M-H, Random, 95% CI
ARISTOTLE 2012	12	1694	31	1742	30.2%	0.39 [0.20, 0.77]
RE-LY Dabigatran 110 2010	2	1195	18	1195	14.2%	0.11 [0.03, 0.47]
RE-LY Dabigatran 150 2010	5	1233	18	1195	22.2%	0.27 [0.10, 0.72]
ROCKET-AF 2012	22	3754	30	3714	33.4%	0.72 [0.42, 1.26]
Tot 95% CI)		**7876**		**7846**	**100.0%**	**0.37 [0.19, 0.72]**
Total events	41		97			

Heterogeneity: Tau² = 0.28; Chi² = 7.82, df = 3 (P = 0.05); I² = 62%
Test for overall effect: Z = 2.90 (P = 0.004)



PROPRIETÀ	WARFARIN	NAO
Inizio effetto	Lento	Rapido
Posologia	Variabile	Fissa
Effetto dei cibi	Sì	No
Interazioni	Molte	Poche
Monitoraggio	Sì	No
Conclusione effetto	Lungo	Breve

Apixaban versus aspirin



Connolly et al, N Engl J Med 2011

CHA_2DS_2-VASc

Risk Factor	Score
Congestive heart failure/LV dysfunction	1
Hypertension	1
Age ≥ 75 y	2
Diabetes mellitus	1
Stroke/TIA/TE	2
Vascular disease (prior myocardial infarction, peripheral artery disease, or aortic plaque)	1
Age 65-74 y	1
Sex **c**ategory (ie female gender)	1

LV = left ventricular; TE = thromboembolism. See Table 1 for expansion of other abbreviations.

Quando iniziare?

Efficacy and Safety of Anticoagulant Treatment in Acute Cardioembolic Stroke

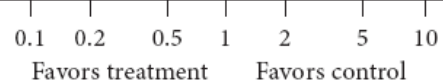
A Meta-Analysis of Randomized Controlled Trials

Maurizio Paciaroni, MD; Giancarlo Agnelli, MD; Sara Micheli, MD; Valeria Caso, MD, PhD

b Outcome: recurrent stroke (anticoagulants vs. aspirin)

Study or subcategory	Anticoagulants n/N	Aspirin n/N	OR (random) 95% CI	Weight %	OR (random) 95% CI
IST heparin any dose [16]	13/772	19/832		44.18	0.74 (0.36–1.50)
HAEST [20]	19/224	17/225		48.17	1.13 (0.57–2.24)
TAIST [18]	4/256	2/112		7.65	0.87 (0.16–4.84)
Total (95% CI)	1,252	1,174		100.00	0.92 (0.57–1.48)

Total events: 36 (anticoagulants), 38 (aspirin)
Test for heterogeneity: $\chi^2 = 0.74$, d.f. = 2 ($p = 0.69$), $I^2 = 0\%$
Test for overall effect: $Z = 0.35$ ($p = 0.73$)



b Outcome: hemorrhagic stroke (anticoagulants vs. aspirin)

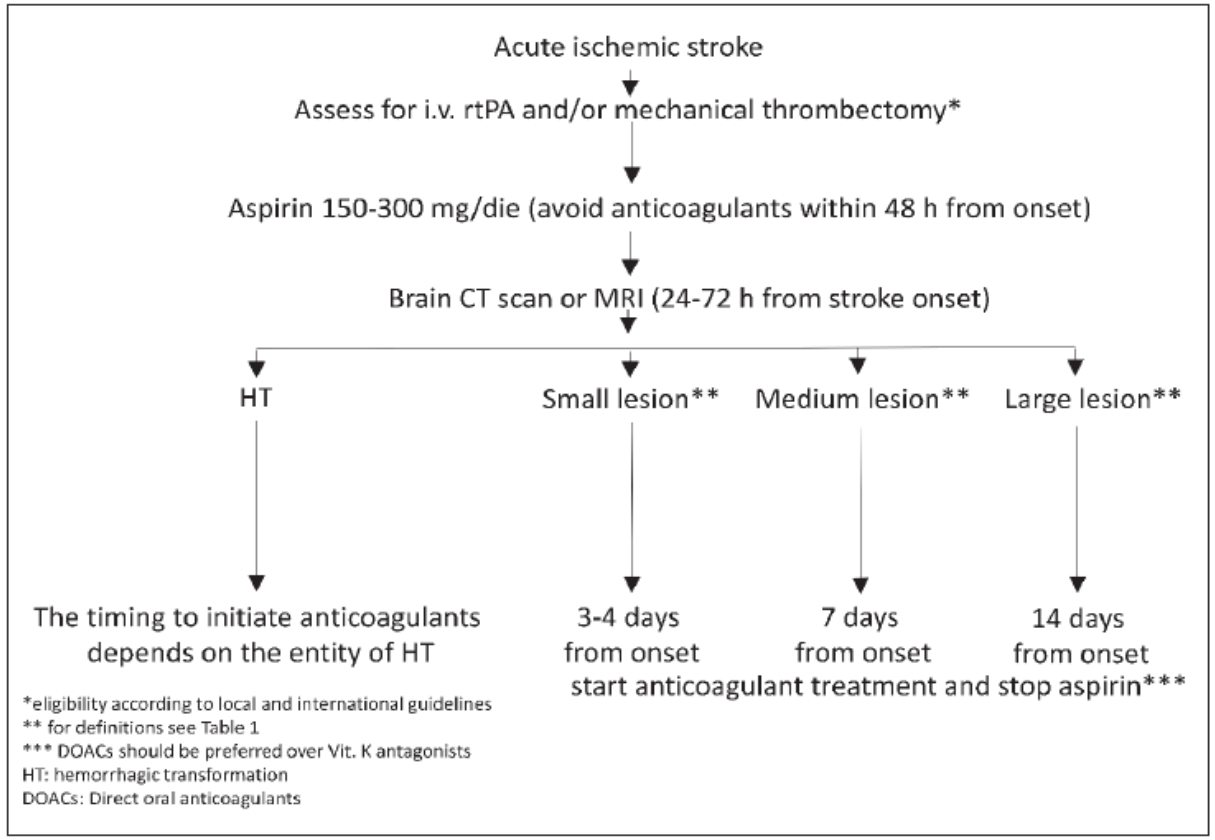
Study or subcategory	Anticoagulants n/N	Aspirin n/N	OR (random) 95% CI	Weight %	OR (random) 95% CI
IST heparin any dose [16]	15/772	5/832		56.89	3.28 (1.19–9.06)
HAEST [20]	6/224	4/225		35.97	1.52 (0.42–5.46)
TAIST [18]	7/256	0/112		7.14	6.76 (0.38–119.45)
Total (95% CI)	1,252	1,169		100.00	2.62 (1.22–5.64)

Total events: 28 (anticoagulants), 9 (aspirin)
Test for heterogeneity: $\chi^2 = 1.33$, d.f. = 2 ($p = 0.51$), $I^2 = 0\%$
Test for overall effect: $Z = 2.46$ ($p = 0.01$)

(*Stroke*. 2007;38:423-430.)

Quando iniziare?

- Non dati disponibili sull'inizio della terapia (dagli studi esclusi pazienti con ictus recente)
- Valutare l'estensione della lesione, il quadro clinico ed il rischio ischemico/emorragico globale



Initiation or resumption of anticoagulation depends on severity of stroke*

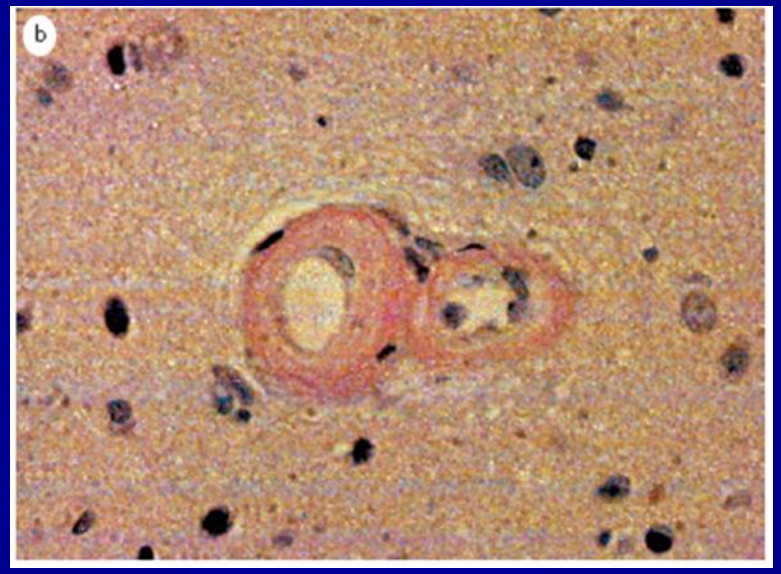
Time to re-initiation depends on infarct size:
1 – 3 – 6 – 12 day rule (Diener's Law)

	TIA	Mild stroke	Moderate stroke	Severe stroke
	As soon as imaging has excluded a cerebral haemorrhage	3–5 days after symptom onset	5–7 days after stroke onset	2 weeks after stroke onset
Day	1	3	6	12

*Mild = NIHSS score <8; moderate = NIHSS score 8–16; severe = NIHSS score >16
NIHSS, National Institutes of Health Stroke Scale
Huisman et al. Thromb Haemost 2012; Personal communication, Hans-Christoph Diener, 2015

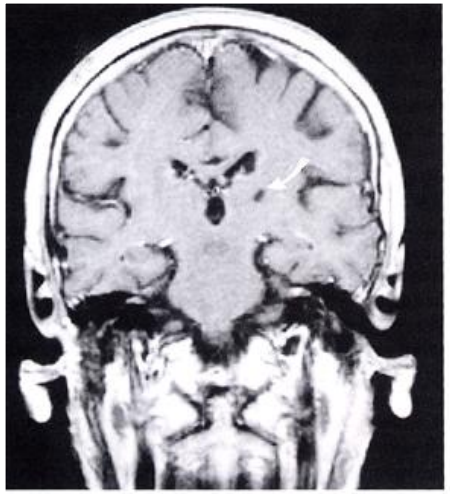
Malattia dei piccoli vasi intracranici (19%)

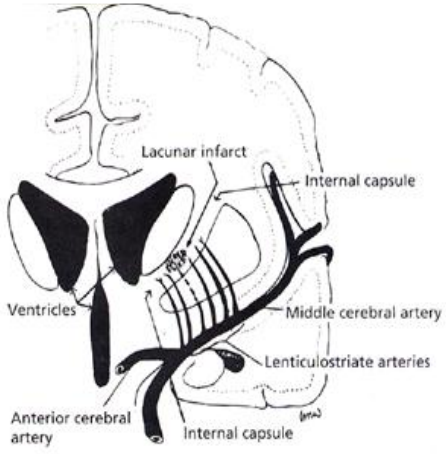
- Coinvolge le piccole arterie (40-440µm di diametro) e le arteriole;
- Soprattutto soggetti ipertesi e/o diabetici
- Sostituzione delle cellule muscolari lisce con collagene



3° scenario

- ECG: ritmo sinusale
- Ecodoppler vasi epiartici: non stenosi significative
- EON: classica sindrome lacunare
    - Emiparesi motoria pura
    - Emisindrome sensitiva pura
    - Emisindrome sensitivo-motoria
    - Emiparesi atassica
    - Sindrome disartria-mano goffa





Profilassi secondaria precoce

- Aspirina 160-325 mg al giorno da subito
- Dopo 14 giorni passare a 100 mg al giorno

- Alternative:
  - Clopidogrel 75 mg/die
  - Aspirina + dipiridamolo

4° scenario

- ECG: ritmo sinusale
- Ecodoppler vasi epiartici: non stenosi significative
- EON: non classica sindrome lacunare

Protocollo diagnostico per definire l'eziologia dello stroke

Esami di secondo livello:

- Eco-cuore TT e TE
- Doppler transcranico con test alle microbolle
- Holter-EGC "prolungato"
- Angio-RM cerebrale

Permettono di fare una diagnosi eziologica nel 15-20% dei casi:

- Aterosclerosi dei vasi intracranici
- Cardioembolia (FA parossistica, masse intracardiache, ipocinesia, patologia valvolare)
- Dissecazioni arteriose
- Ateromasia arco aortico
- Pervietà del Forame Ovale

Protocollo diagnostico per definire l'eziologia dello stroke

Esami di terzo livello:

- VES, ANA, trombofilia, LAC, HIV, TPHA, elettroforesi Hb;
- Eco-Doppler dei vasi venosi degli arti inferiori
- Dosaggio lattato prima e dopo sforzo muscolare
- Dosaggio alfa-galattosidasi A nel plasma
- Rx torace
- Rachicentesi
- Angiografia cerebrale
- Biopsia cutanea e muscolare
- Indagine genetica

Permettono di fare una diagnosi eziologica nel 3-4% dei casi:

- Connettiviti, vasculiti
- Vasculiti post-infettive
- Displasia fibromuscolare e anomalie vasali
- Disordini emocoagulativi ed ematologici
- Embolia paradossa (fistola polmonare, Rendu-Osler)
- Malattia di Moyamoya
- CADASIL, MELAS, Fabry e altre patologie genetiche

Stroke

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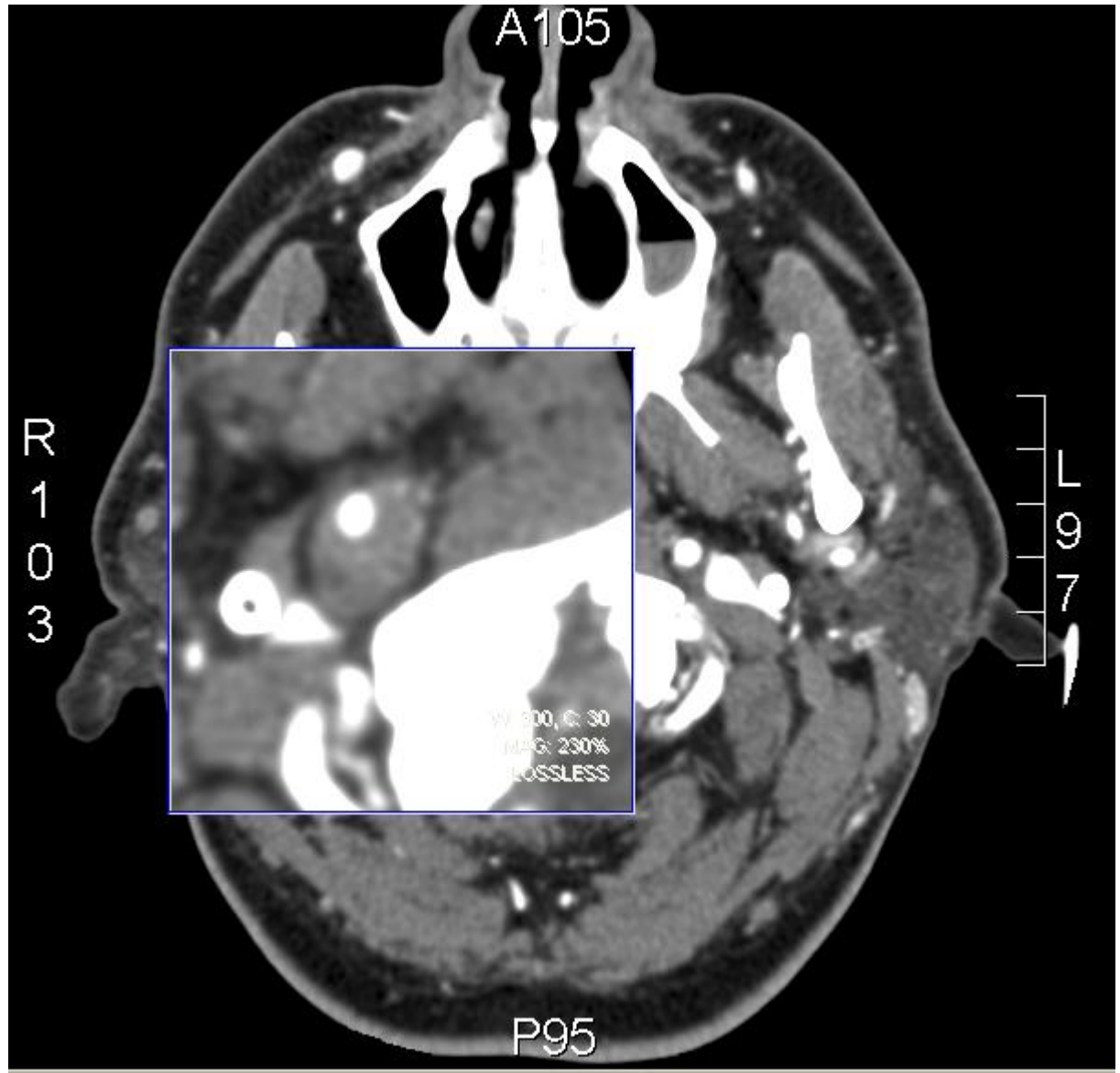
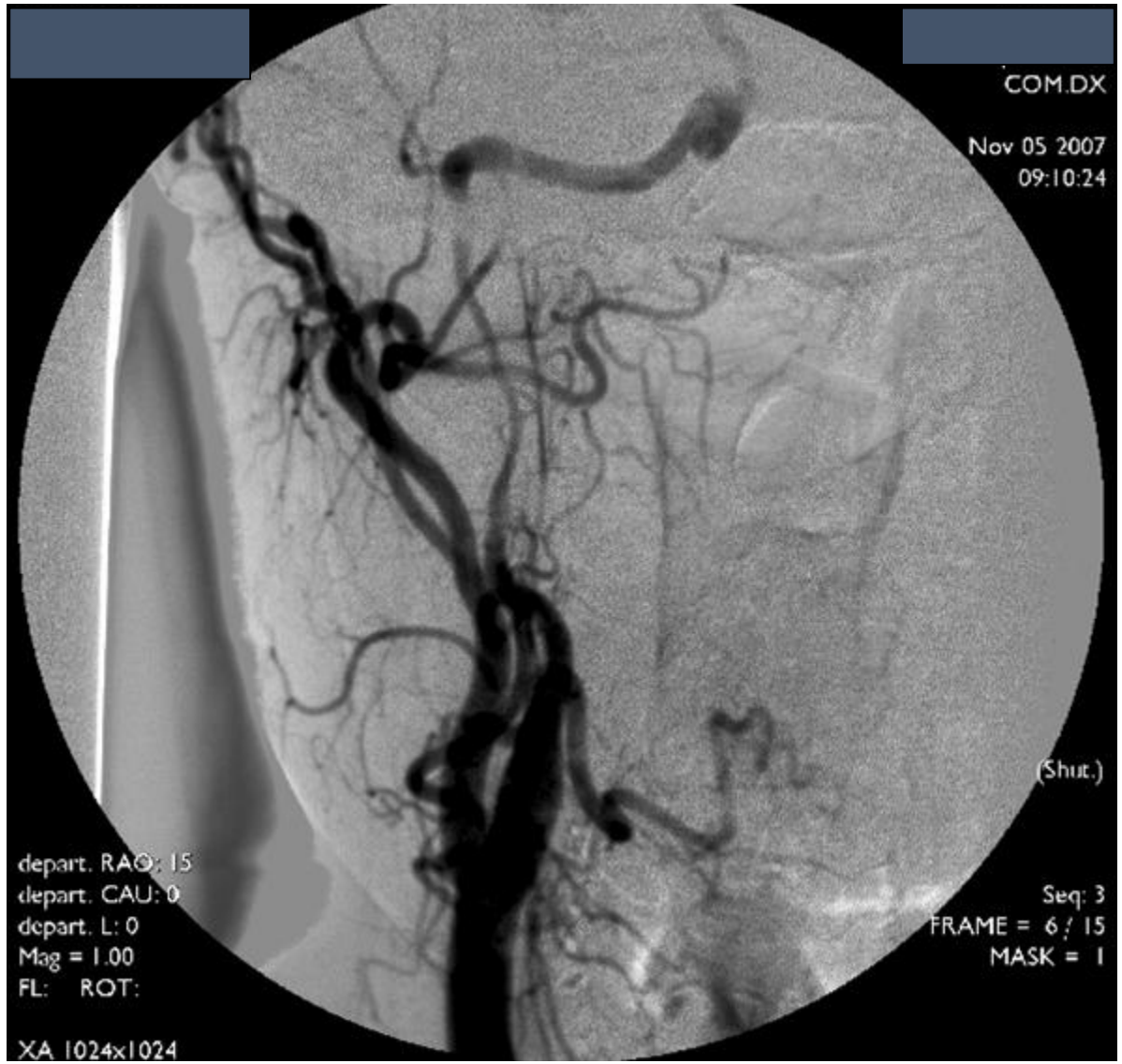
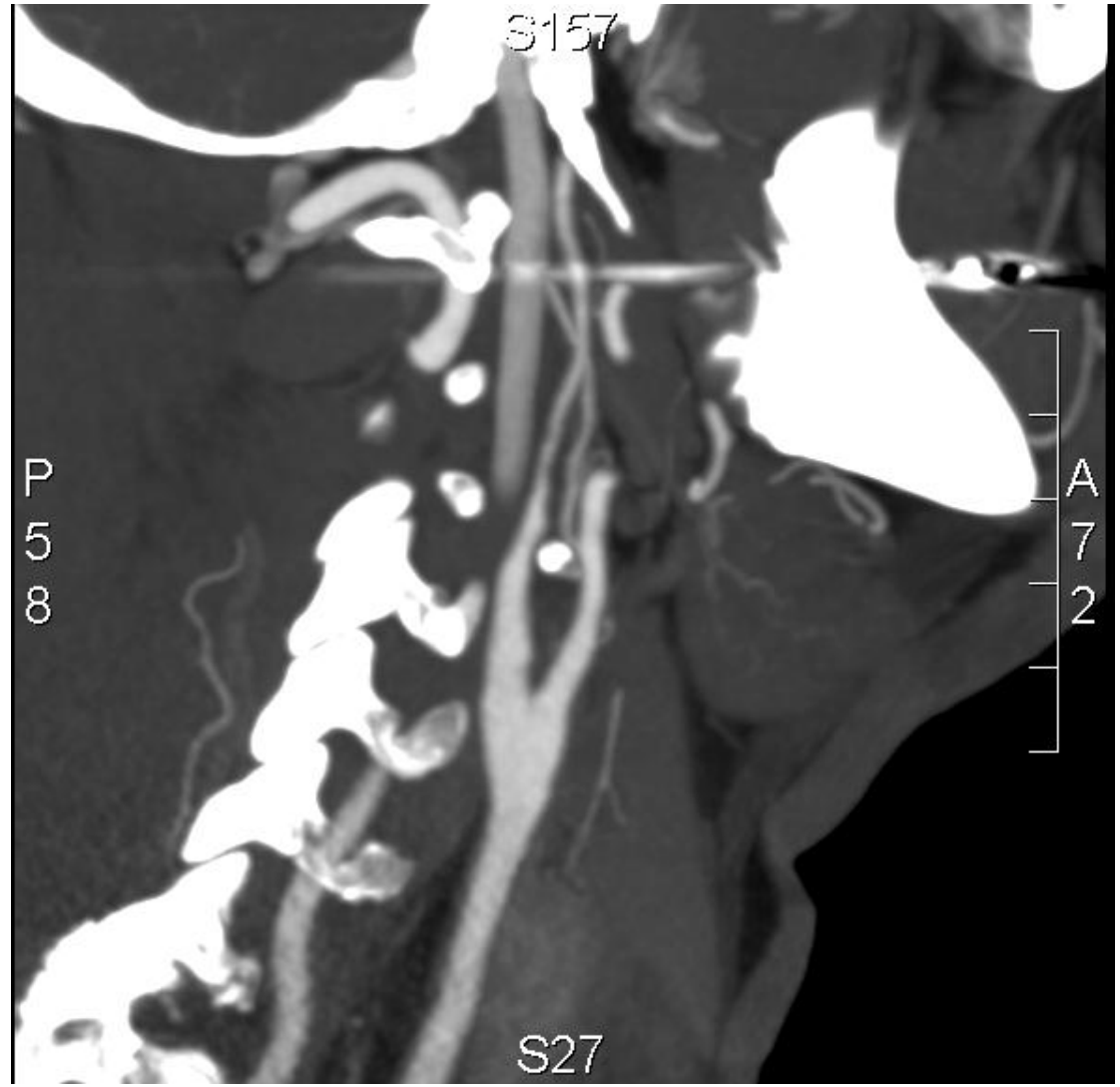
ELSEVIER
CHURCHILL
LIVINGSTONE

Less common causes

- Trauma
- Arterial dissection in the neck, head and thorax
- Connective tissue, inflammatory and other vasculopathies
- Congenital arterial anomalies
- Moyamoya syndrome
- Embolism from arterial aneurysm
- The cholesterol embolization syndrome
- Migraine
- Haematological disorders
- Infection
- Cancer, irradiation and chemotherapy
- Female sex hormones
- Fibromuscular dysplasia
- Drug abuse
- Metabolic causes
- Gastrointestinal disorders
- Perioperative stroke
- Mitochondrial disorders
- Genetic conditions (CADASIL, Fabry's disease)

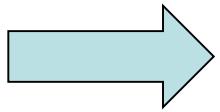

A105
R
1
0
3
L
9
7
P95


COM.DX
Nov 05 2007
09:10:24
(Shut.)
depart. RAO: 15
depart. CAU: 0
depart. L: 0
Mag = 1.00
FL: ROT:
XA 1024x1024
Seq: 3
FRAME = 6 / 15
MASK = 1


S157
P
5
8
A
7
2
S27

Perugia Stroke Registry

- Tot. 2194 pazienti



- 547 Cardioembolia	25.0%
- 490 Aterosclerosi	22,3%
- 421 Malattia dei piccoli vasi	19,2%
- 350 Causa indeterminata	15.9%
- 202 Più possibili cause	9,2%
- 184 Altre cause	8,4%

Paciaroni 2014, unpublished data

Ictus da causa indeterminata

- Non si possono effettuare tutti gli esami diagnostici:
  - severità dell'ictus (morte precoce)
  - rifiuto del paziente
- Esami diagnostici effettuati in tempi impropri
- Paziente con 2-3 cause potenziali
- Tutti gli esami fatti ma tutti risultati negativi

96 hours ECG monitoring for patients with ischemic cryptogenic stroke or transient ischaemic attack

Giorgia Manina · Giancarlo Agnelli · Cecilia Becattini · Gianluca Zingarini · Maurizio Paciaroni

- 114 pazienti con stroke criptogenetico

ECG secondo Holter 96 ore

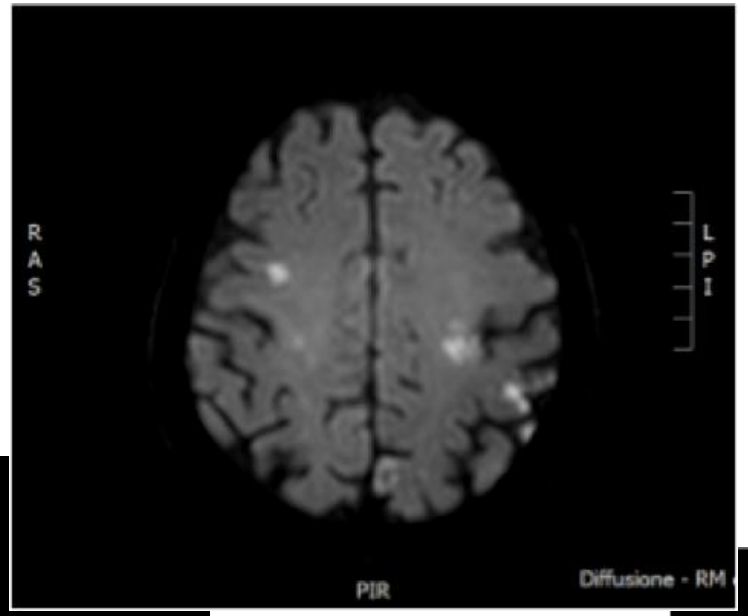
- 20 FA nelle prime 24 ore

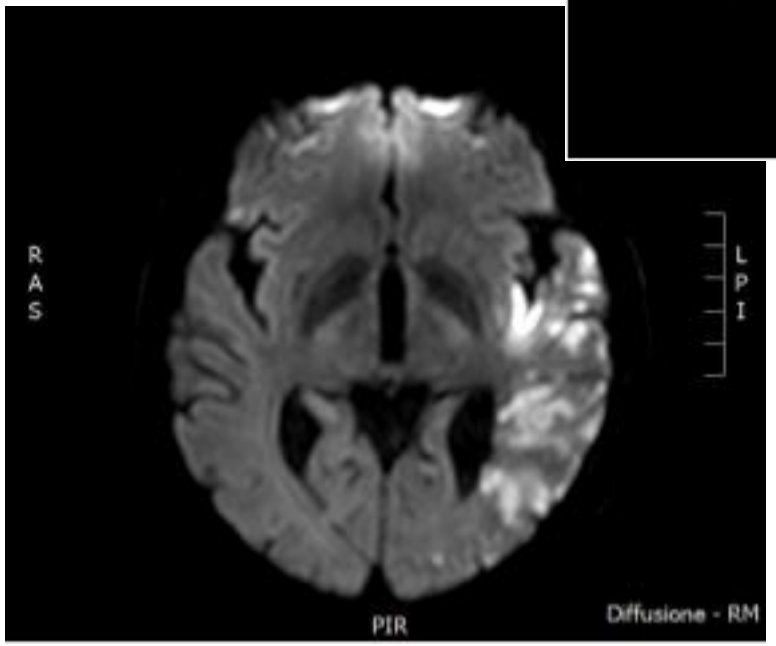
- 9 FA dopo 24 ore

- Tot. 29 FA (24,3%)

Intern Emerg Med 2012

*E*mbolic *S*troke of *U*ndetermined *S*ource (ESUS)





How is ESUS defined?

- Advances in imaging and better understanding of stroke pathophysiology have prompted a reassessment of cryptogenic stroke

- An International Working Group of Neurologists proposes the pragmatic construct of ‘embolic strokes of undetermined source’
  - A more clinically useful, positively defined entity than cryptogenic stroke (for which there is an absence of standard diagnostic criteria)

- ESUS is defined as a non-lacunar brain infarct without proximal arterial stenosis or cardioembolic sources
  - Step-wise approach to diagnosis
  - Patients with ESUS comprise a subset of those with cryptogenic stroke

Hart RG et al. Lancet Neurol 2014;13:429–38

Profilassi secondaria nello stroke non dovuto a cardioembolismo, non dovuto a stenosi carotidea severa

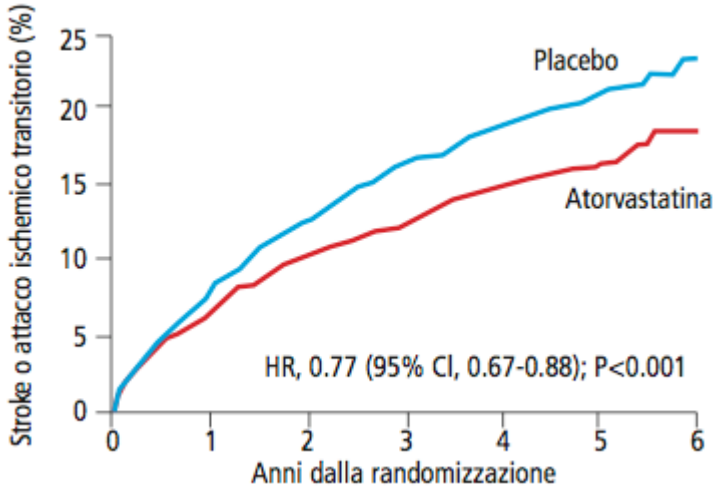
Profilassi secondaria

- Aspirina 100 mg/die
- Clopidogrel 75 mg/die
- Aspirina + dipiridamolo

Correzione dei fattori di rischio

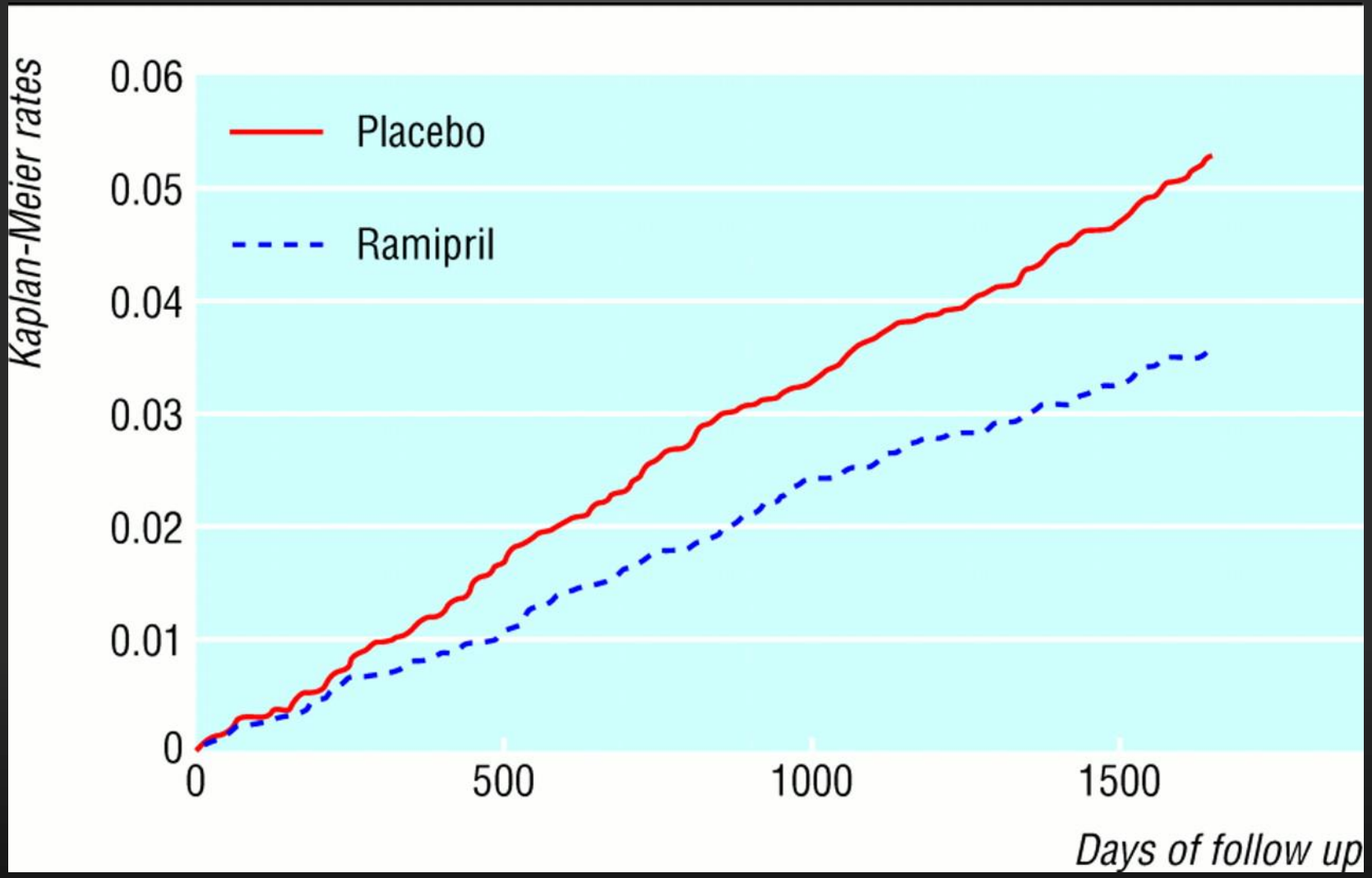
- Correzione dello stile di vita
- Terapia anti-ipertensiva
- Attento controllo del diabete

- Se colesterolo LDL superiore a 100 mg/dL: <u>atorvastatina 80 mg/die</u> (ictus non cardioembolico)



(Amarenco P, N Eng J Med 2006).

HOPE: Heart Outcomes Prevention Evaluation



RRR outcome combinato: 22%
RRR stroke: 32%

5° scenario

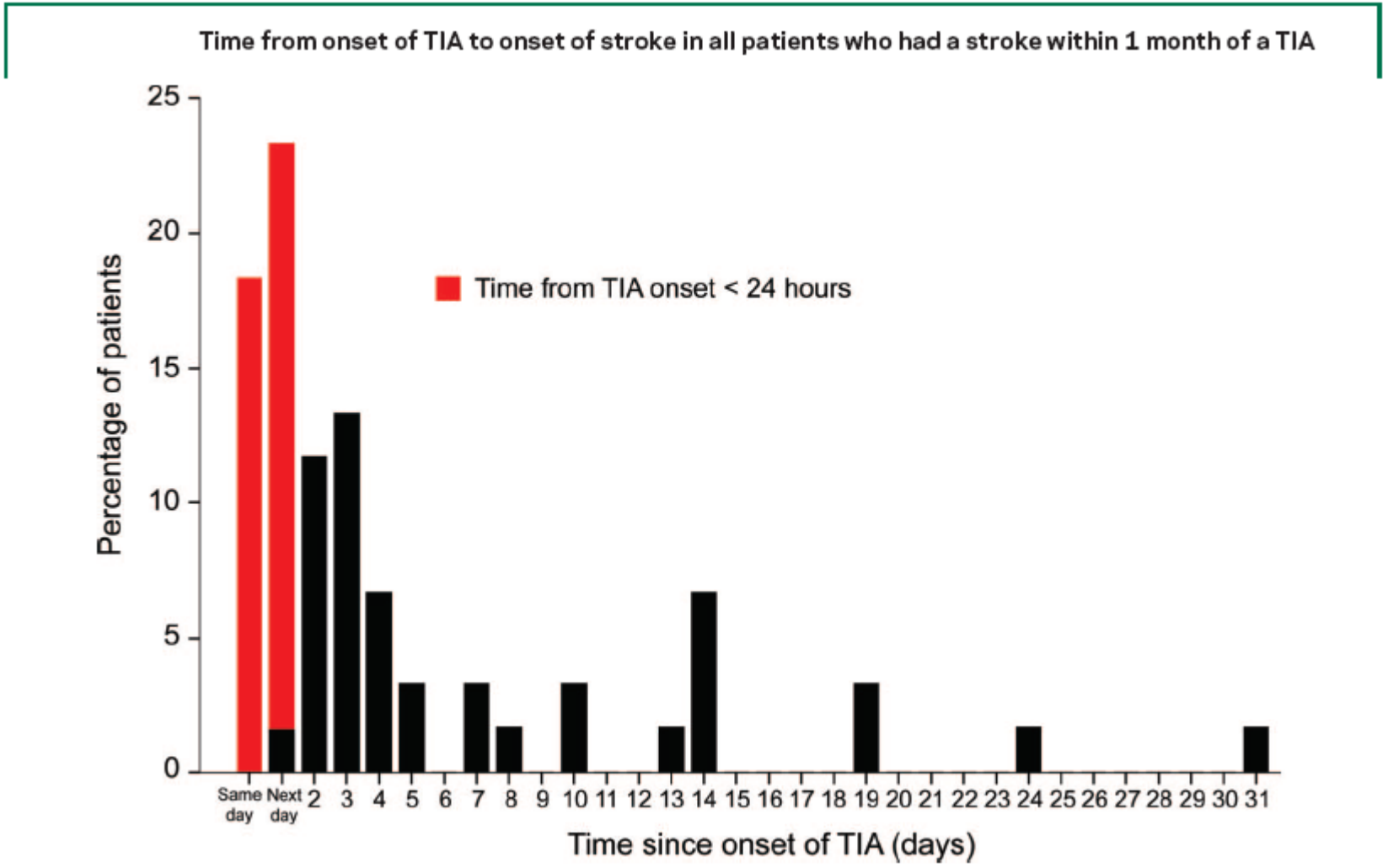
- Maschio
- 72 anni

- Ipertensione arteriosa
- Fumatore

- Emiparesi sinistra (FR 4/5 sia all'arto superiore che all'arto inferiore) con disturbi sensitivi
- NIHSS=9

- Durata della sintomatologia: 2 ore

Population-based study of risk and predictors of stroke in the first few hours after a **TIA**



Chandratheva et al, Neurology 2009

TIA: emergenza!
Cosa fare subito?

- TC encefalo
- Esami emato-biochimici
- ECG
- Ecodoppler vasi epiaortici
- Calcolare ABCD2 score

Transient ischaemic attack: clinical relevance, risk prediction and urgency of secondary prevention

TABLE 1 **ABCD2 scoring system**[1]

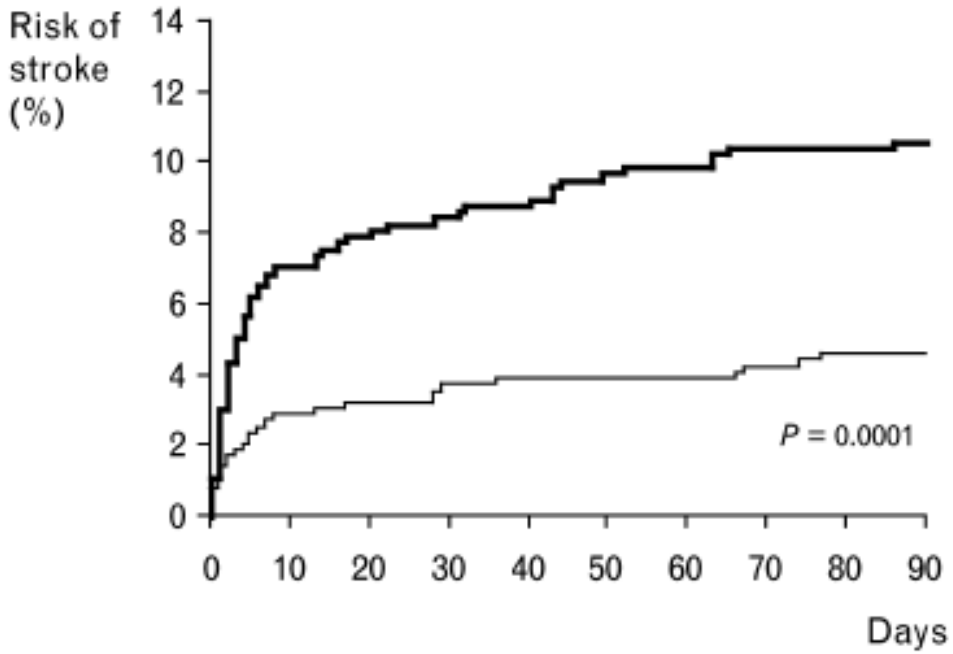
A – Age > 60	1 point
B – BP > 140/90	1 point
C – Clinical features	1 point for sudden speech disturbances without weakness 2 points for sudden unilateral weakness
D1 - Duration	1 point for duration 10-59 min, 2 points for > 60 min
D2 - Diabetes	1 point

Risk of stroke after TIA* according to the ABCD2

Risk group	Score	Prevalence of stroke		
		2 days	7 days	90 days
Low	0-3	1.0%	1.2%	3.1%
Moderate	4-5	4.1%	5.9%	9.8%
High	6-7	8.1%	12%	18%

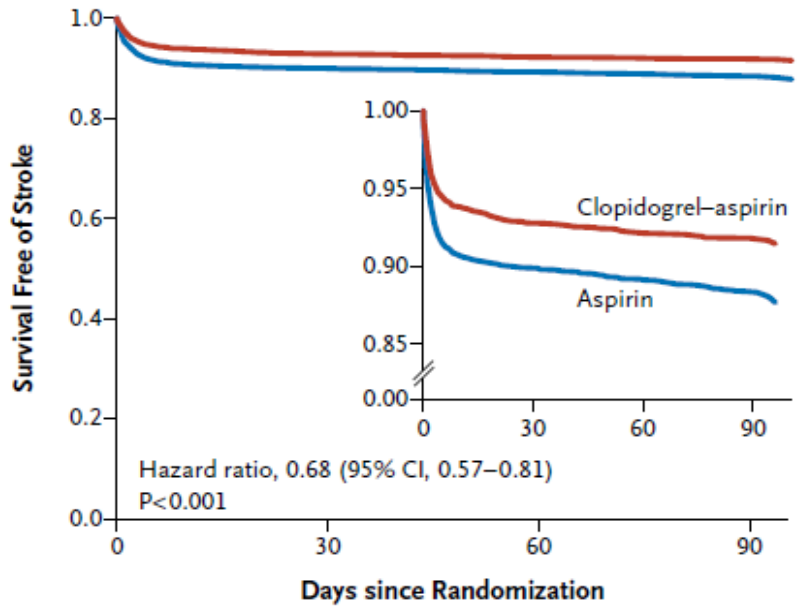
Giles and Rothwell, 2009

Studio Express



Rothwell et al, Lancet Neurology 2009

Clopidogrel with Aspirin in Acute Minor Stroke or Transient Ischemic Attack



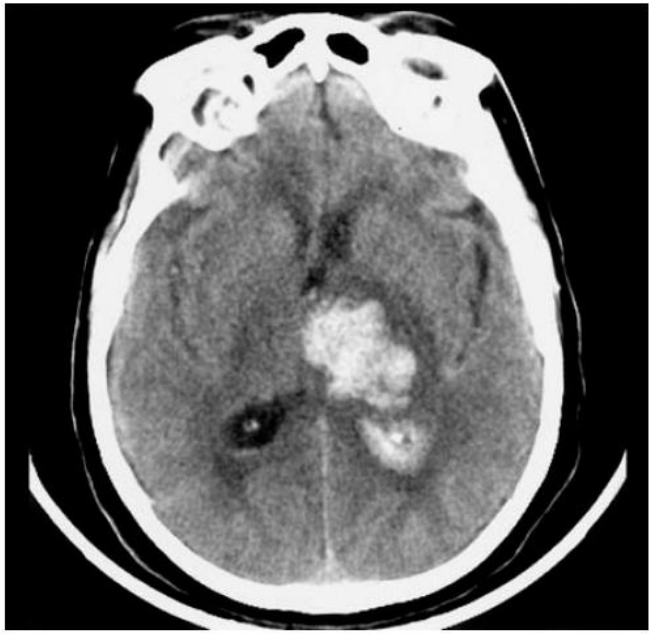
No. at Risk

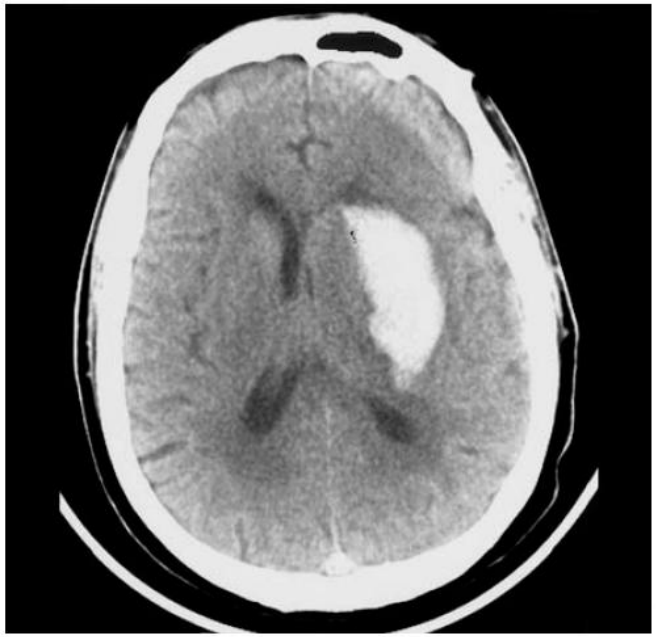
Aspirin	2586	2307	2287	1906
Clopidogrel–aspirin	2584	2376	2361	1989

Figure 1. Probability of Survival Free of Stroke.

The primary outcome was ischemic or hemorrhagic stroke. The inset shows the same data on an enlarged segment of the y axis.

Che tipo di stroke è (ischemico o emorragico)?



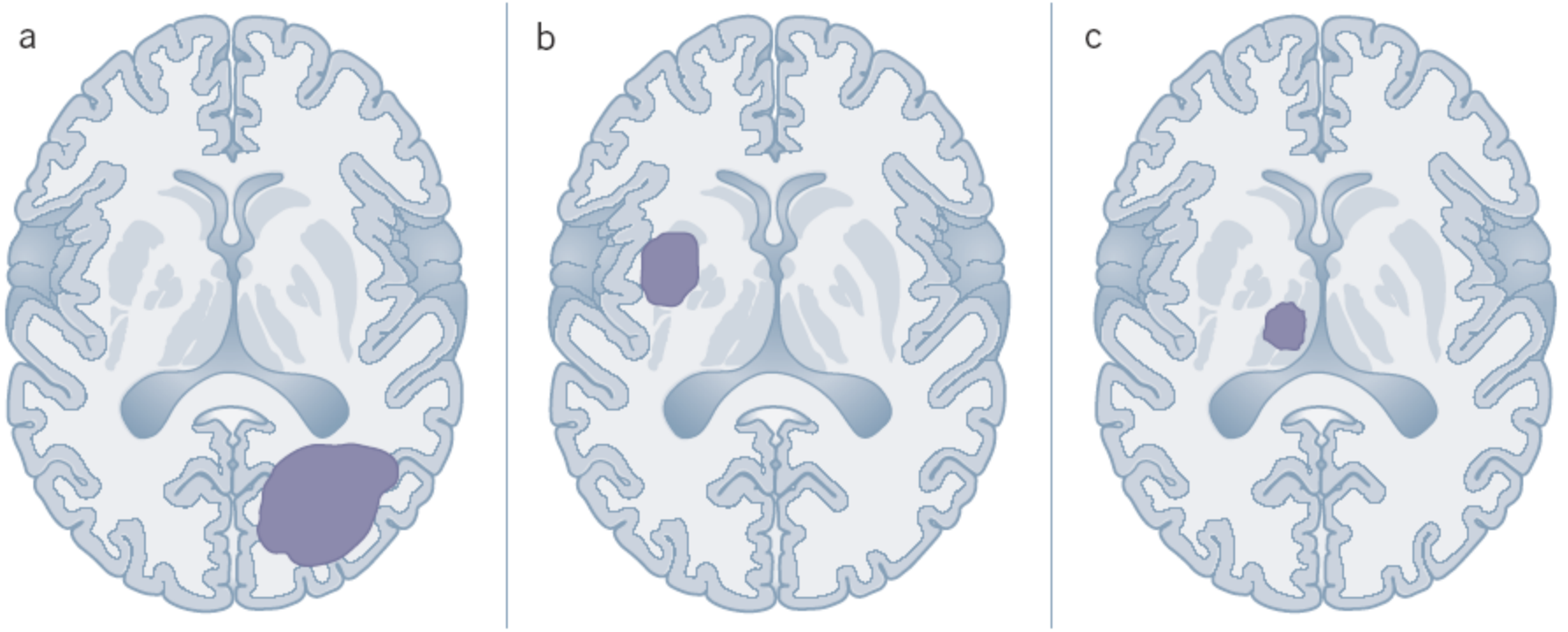


Etiology of intracranial hemorrhage

- Spontaneous Hemorrhages (78-88%):
  - Lipoialinosis due to hypertension (Deep)
  - Cerebral amyloid angiopathy (Lobar)

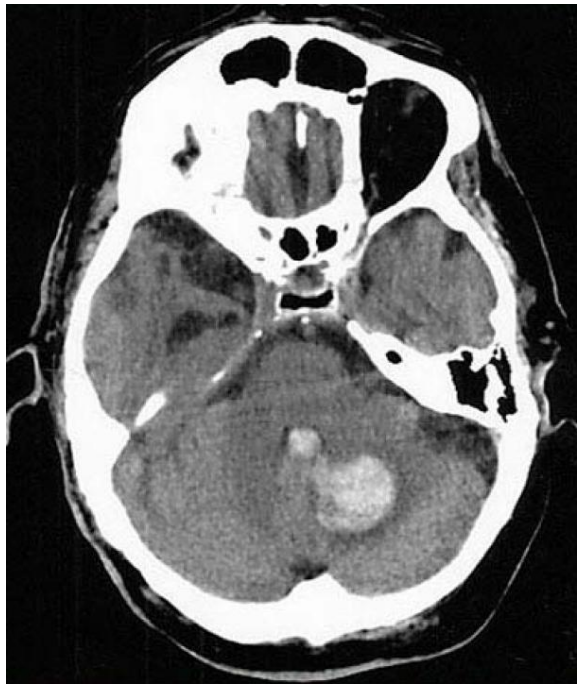
- Secondary Hemorrhages :
  - Vascular malformation
  - Tumor
  - Coagulation disorders
  - Therapy with antiplatelets, anticoagulants or thrombolytics
  - Granulomatous Angitiis and other vasculitis
  - Drugs (simpaticomimetics)
  - Mieloproliferative disease
  - Eclampsya
  - Moyamoya
  - Hemorrhagic transformation due to reperfusion of an ischemic lesion
  - Trauma

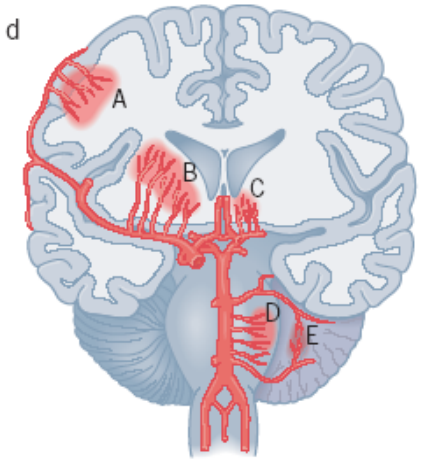
Deep and lobar hemorrhages



Deep hemorrhage

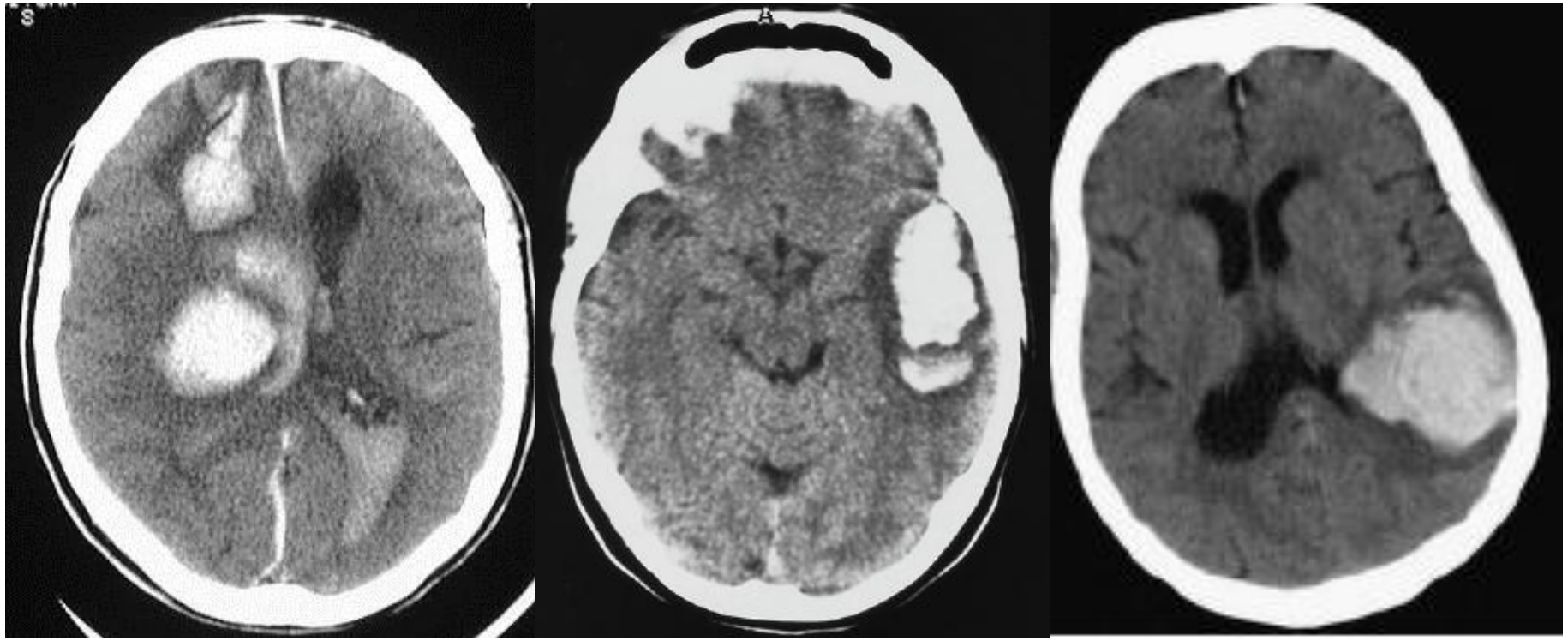
Small vessel disease



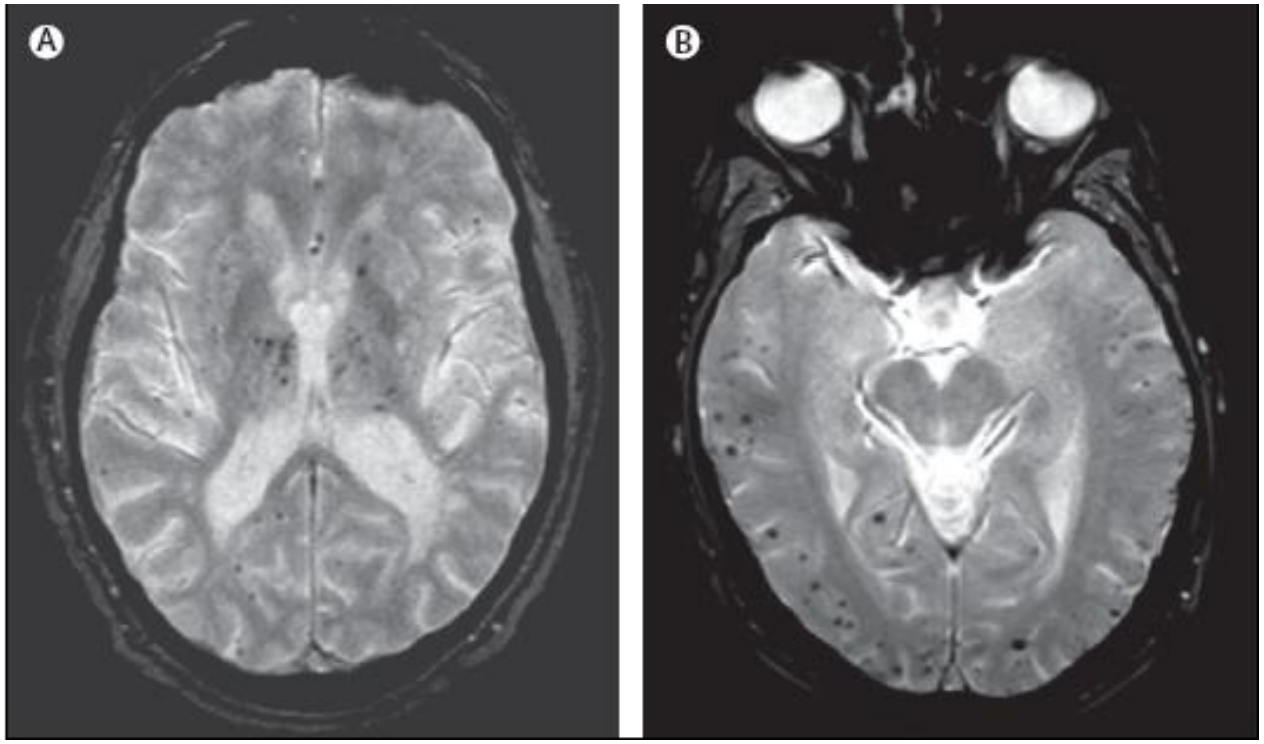


Lobar hemorrhage

Cerebral amyloid angiopathy

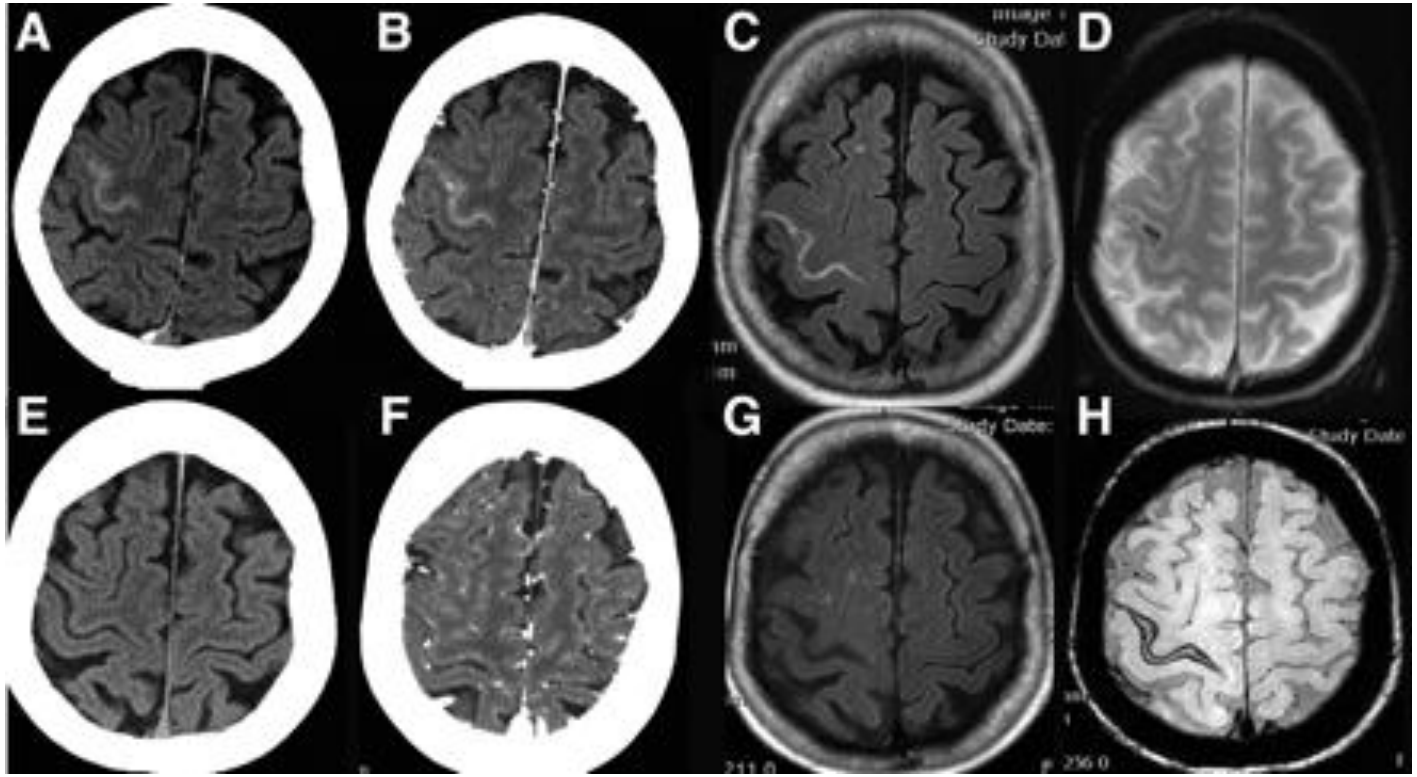


Cerebral microbleeds (CBM)



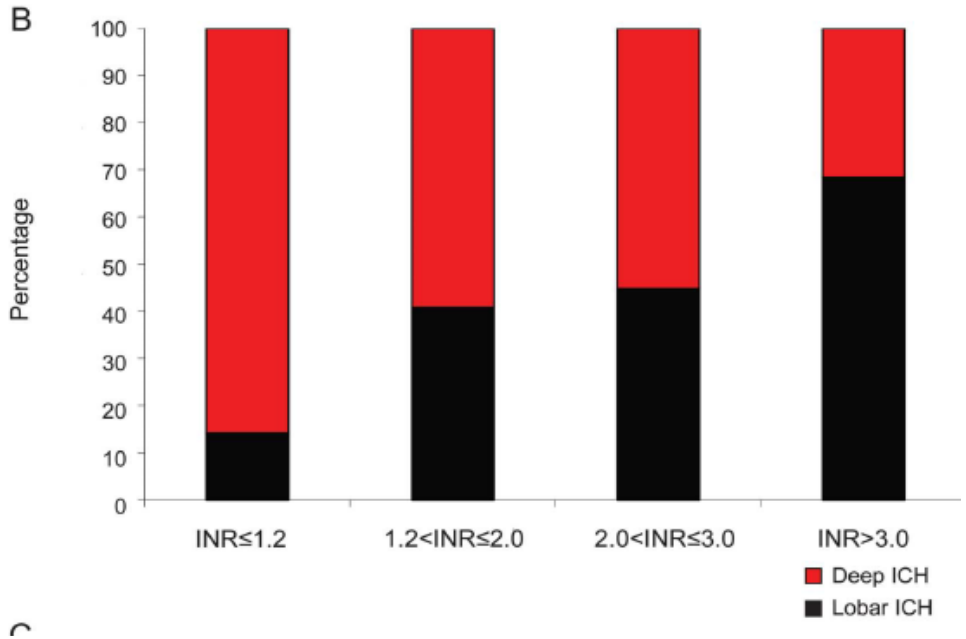
Cerebral amyloid angiopathy

and focal cisternal microbleeds



ICH location in patients treated with anticoagulants

	Antiplatelet-related ICHs vs non-antithrombotic-related ICHs		Oral anticoagulant-related ICHs vs non-antithrombotic-related ICHs	
Model 1	OR	95% CI	OR	95% CI
Age, per year	1.05	1.03-1.07	1.06	1.03-1.09
Hypertension	1.86	1.22-2.85	1.31	0.72-2.38
ICH location, lobar vs deep	1.17	0.83-1.64	1.70	1.03-2.81



Pezzini et al, Neurology 2014

Distribution of intracranial hemorrhage

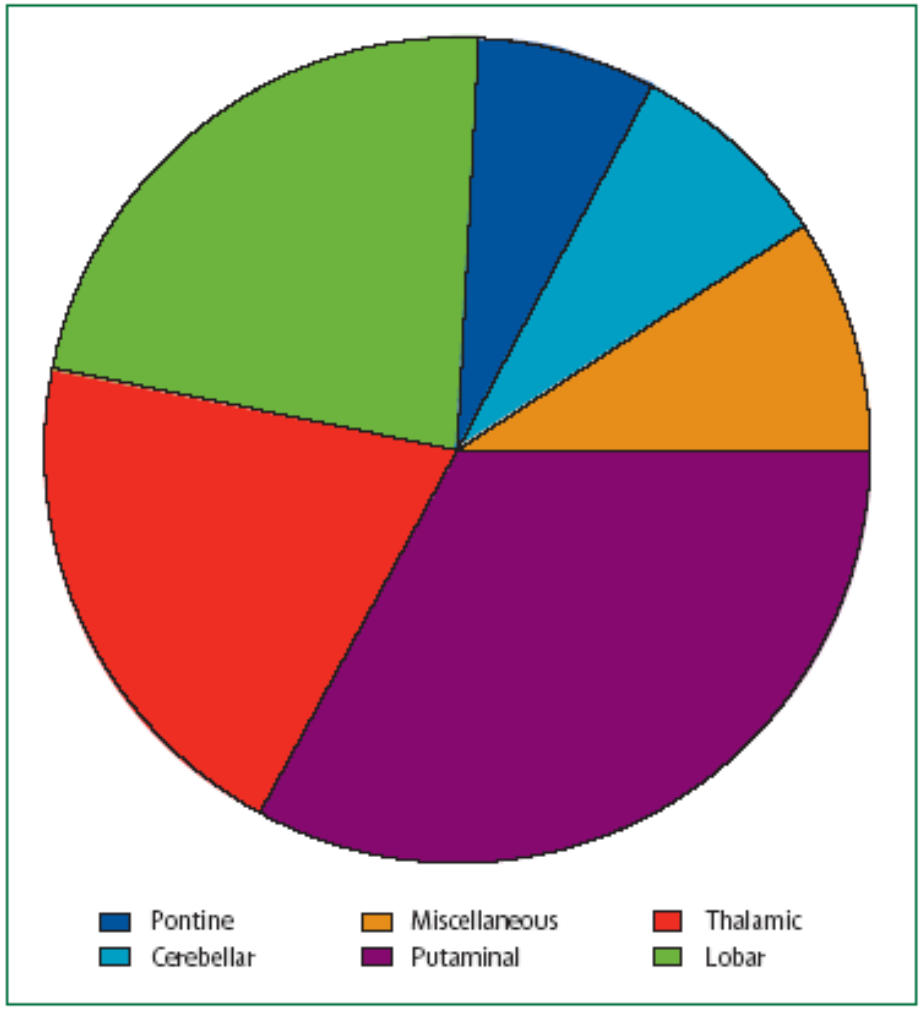


Figure 2: Distribution of ICH[1]
The predominant form is ganglionic.

Mortality of intracerebral hemorrhage

	7-Day			30-Day			1-Year		
Type	n	Percent	95% CI	n	Percent	95% CI	n	Percent	95% CI
ICH confirmed by neuroimaging (n=464)	111	23.9	20.0–27.8	192	41.4	36.9–45.9	239	51.5	47.0–56.0
Lobar (n=205)	55	26.8	20.8–32.9	91	44.4	37.6–51.2	112	54.6	47.8–61.4
Deep (n=210)	39	18.6	3.3–23.8	75	35.7	29.2–42.2	98	46.7	39.9–53.4
Posterior fossa (n=44)	15	34.1	20.1–48.1	23	52.3	37.5–67.1	26	59.1	44.6–73.6
Intraventricular or multiple localized (n=5)	2	40.0	0–82.9	3	60.0	17.1–102.9	3	60.0	17.1–102.9

Stroke, 2009

Risk of recurrence in general Intracerebral hemorrhage

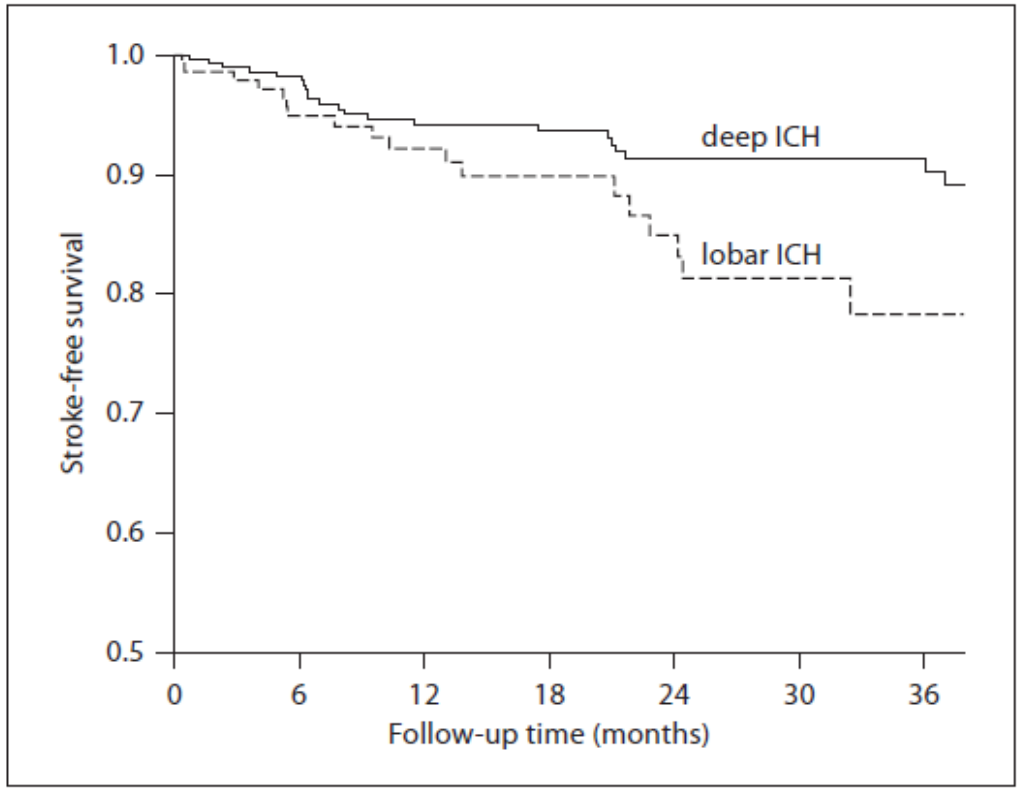
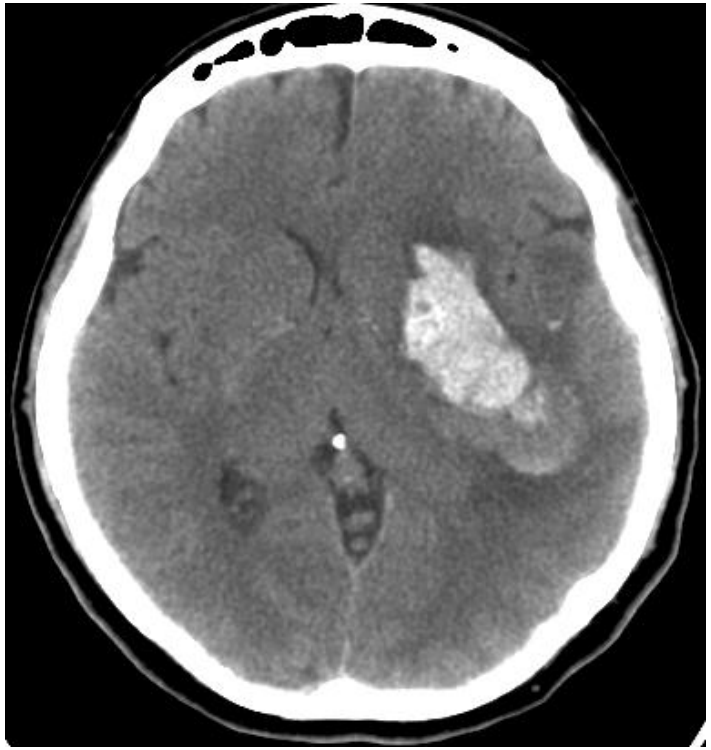


Fig. 1. Kaplan-Meier curves for stroke-free survival after deep (n = 308) and lobar (n = 157) ICH.

Weimar et al; Cerebrovascular Dis 2011; 32: 283-288

45 year old woman with a history of migraine,
no vascular risk-factors




A
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259447
F Apr 26 1966
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Mar 12 2010
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(Shuc.)
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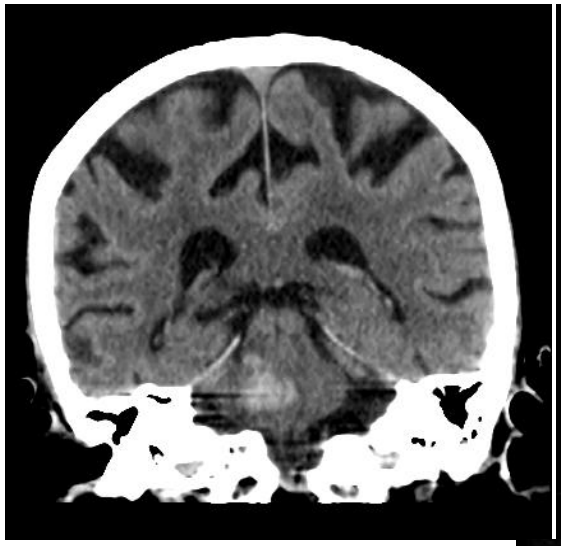
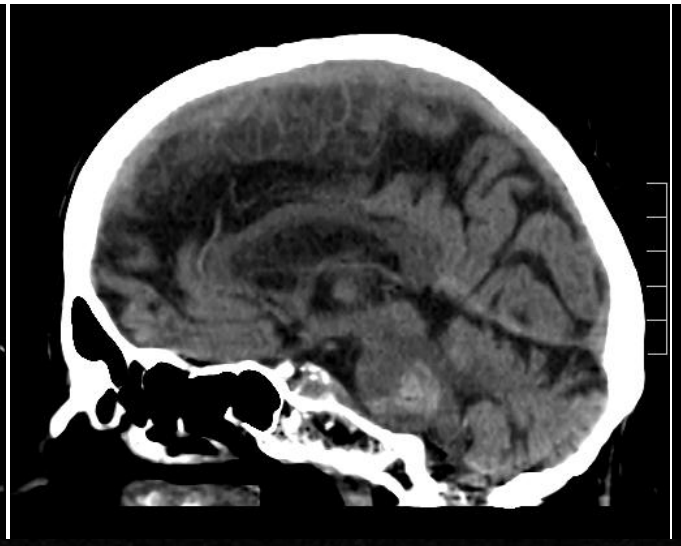
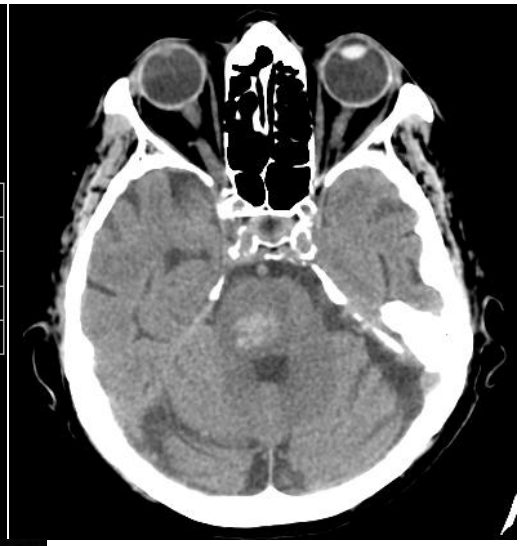
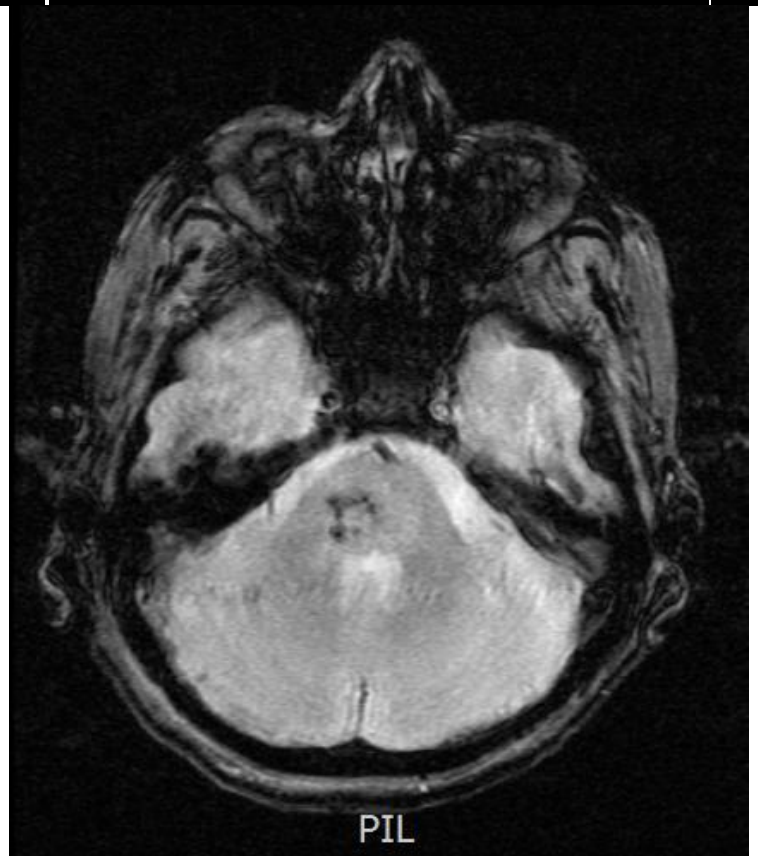
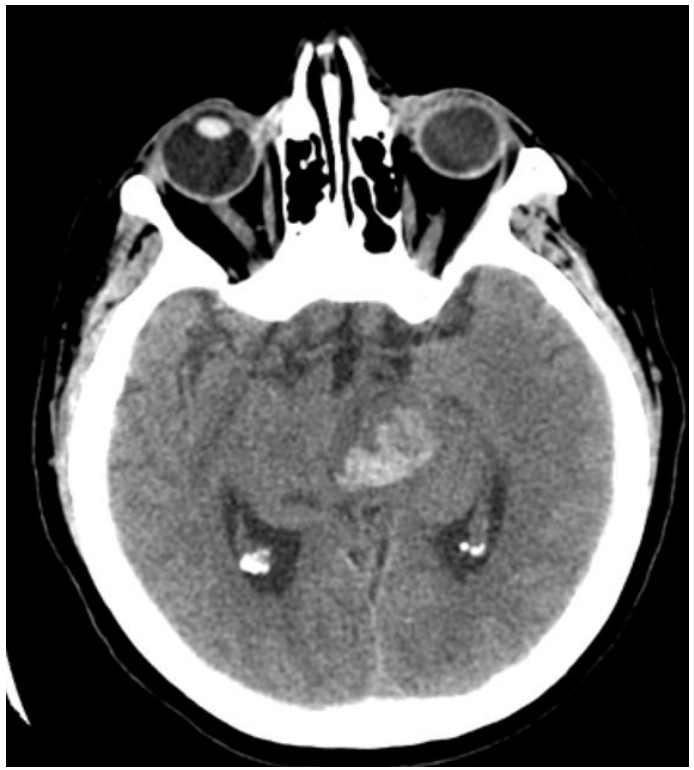
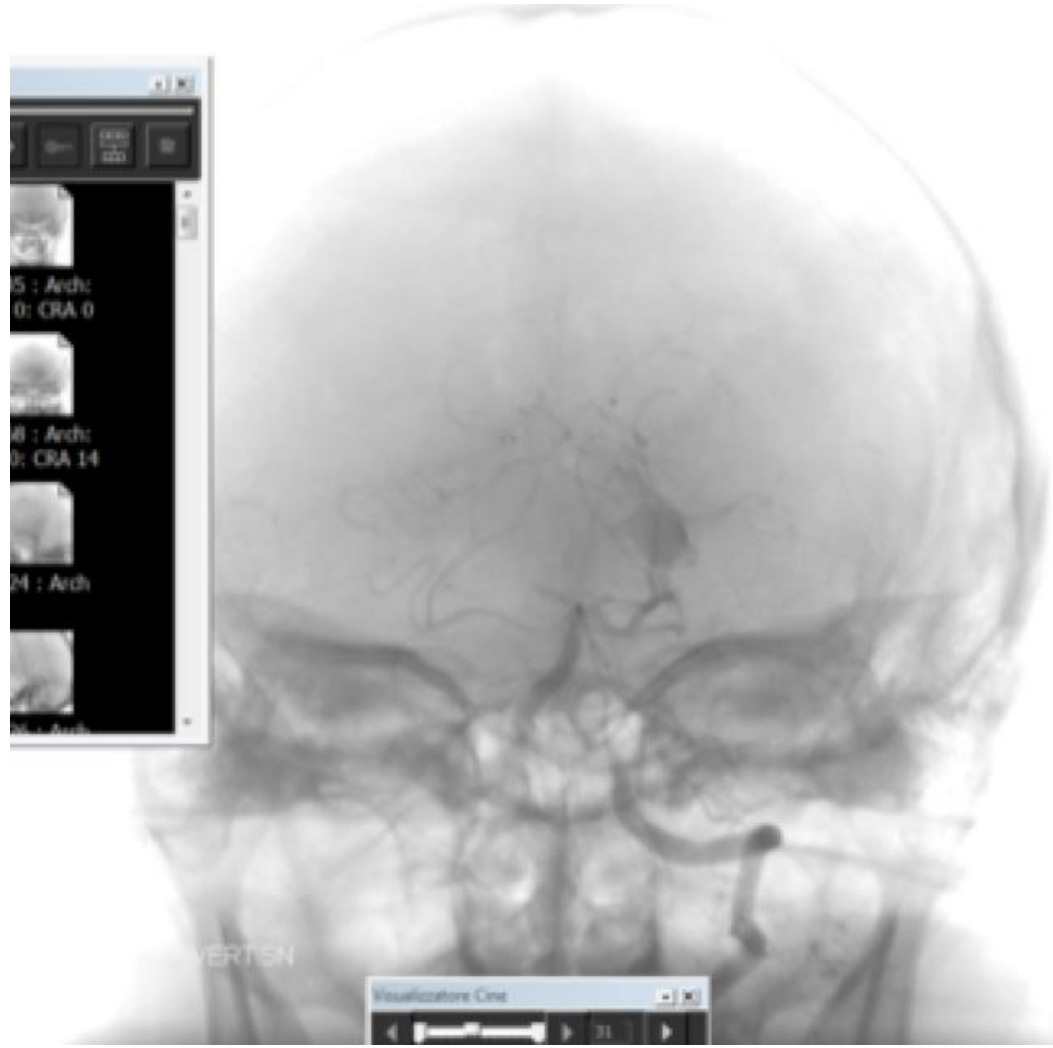




PIL

60 year–old female admitted to another hospital
with aphasia and right hemiparesis

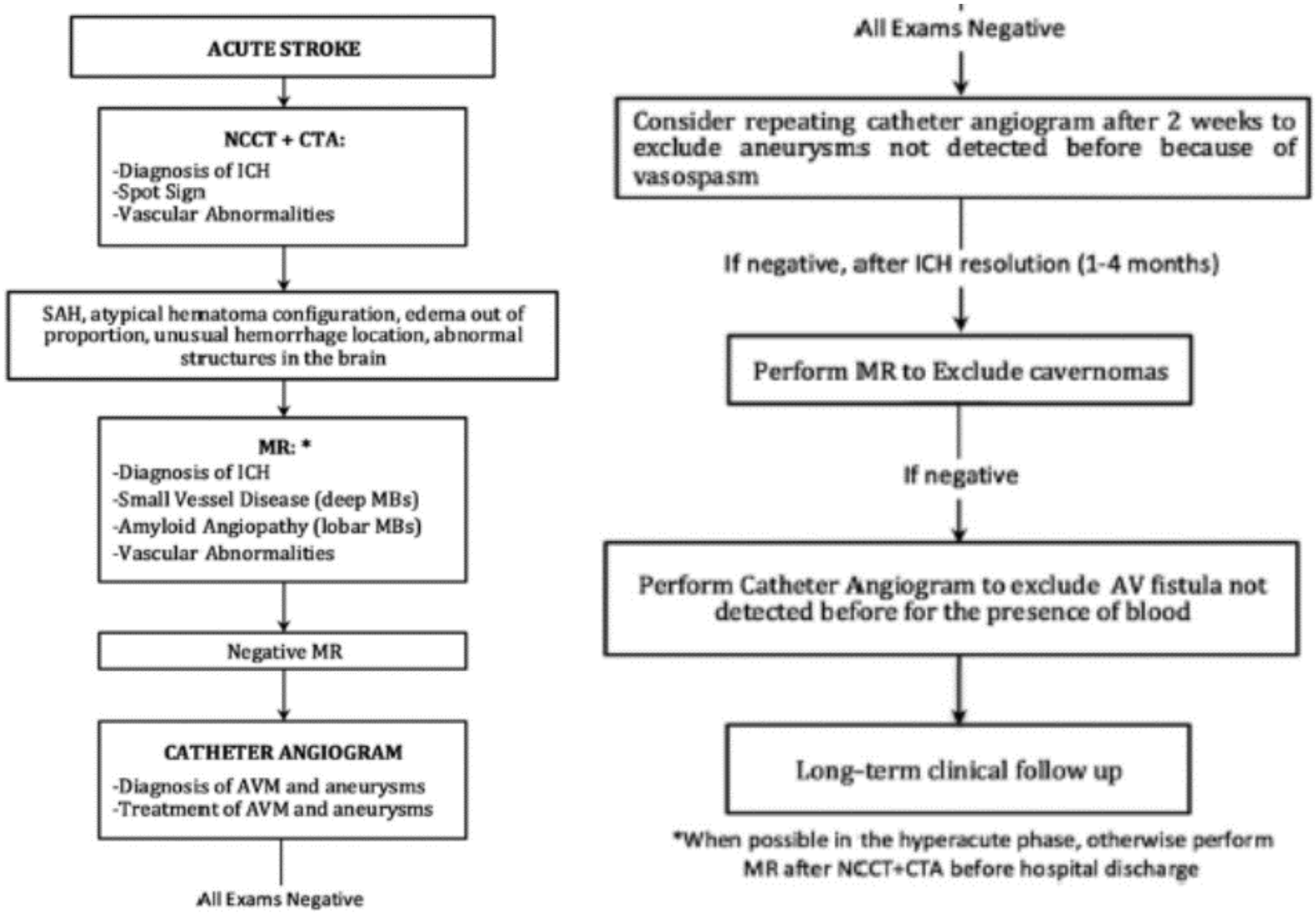
One month later: Admission to Stroke Unit due to severe headache/vomit and right hemiplegia and global aphasia




5 : Arch:
0: CRA 0
8 : Arch:
3: CRA 14
24 : Arch
Visualizzatore Cine

Neuroimaging in Intracerebral Hemorrhage

Federica Macellari, MD; Maurizio Paciaroni, MD; Giancarlo Agnelli, MD; Valeria Caso, PhD, MD



Stroke. 2014;45:903-908


PINK
FLOYD
THE
WALL