

Management of patient with acute stroke

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Management of patient with acute stroke

- Clinical examination (I)
- ICH or ischemic stroke?
- Clinical examination (II)
- Reperfusion therapy & antithrombotic therapy
- Malignant MCA
- Management of complications
- Stroke Unit

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Admission clinical examination

Sudden onset of signs of focal or global disturbance of cerebral function * with no apparent nonvascular cause**

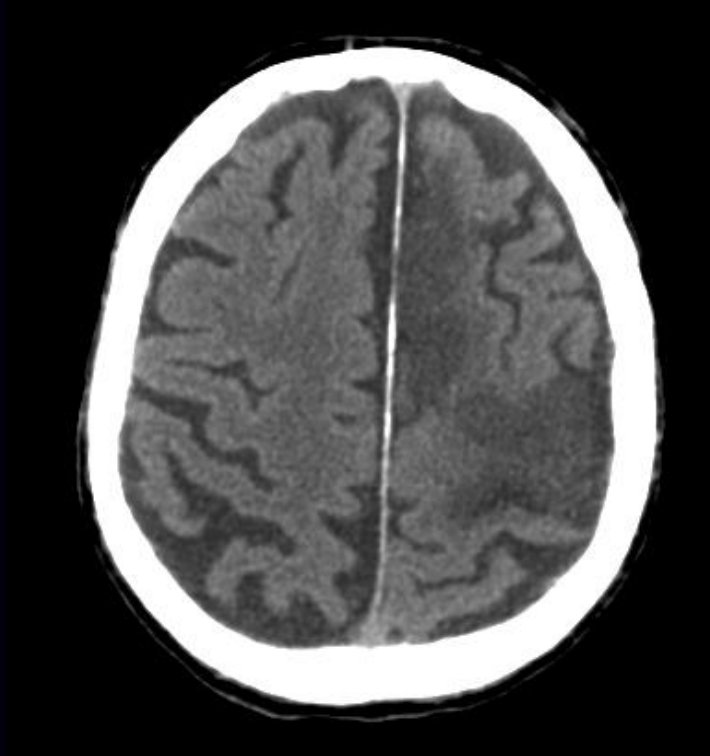
* lasting more than 24 h (unless interrupted by specific treatment, surgery or death)

** epilepsy
brain tumor
brain abscess
encephalitis
multiple sclerosis & other inflammatory diseases
metabolic causes
hysteria

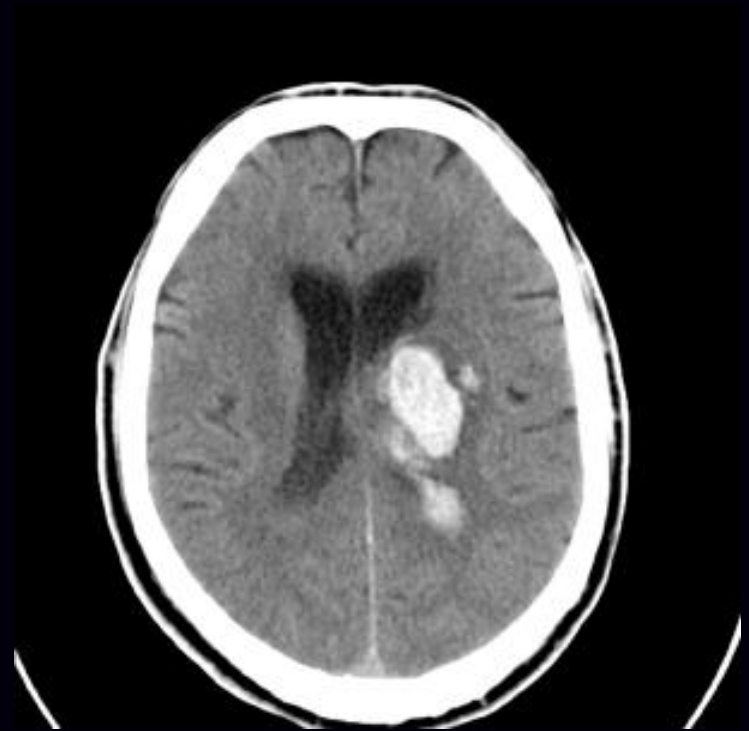
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Ischemic vs. hemorrhagic stroke



80-90%



10-20%

Management of patient with ICH

For most patients with ICH, the usefulness of surgery is uncertain (Class IIb; Level of Evidence: C)

Specific exceptions:

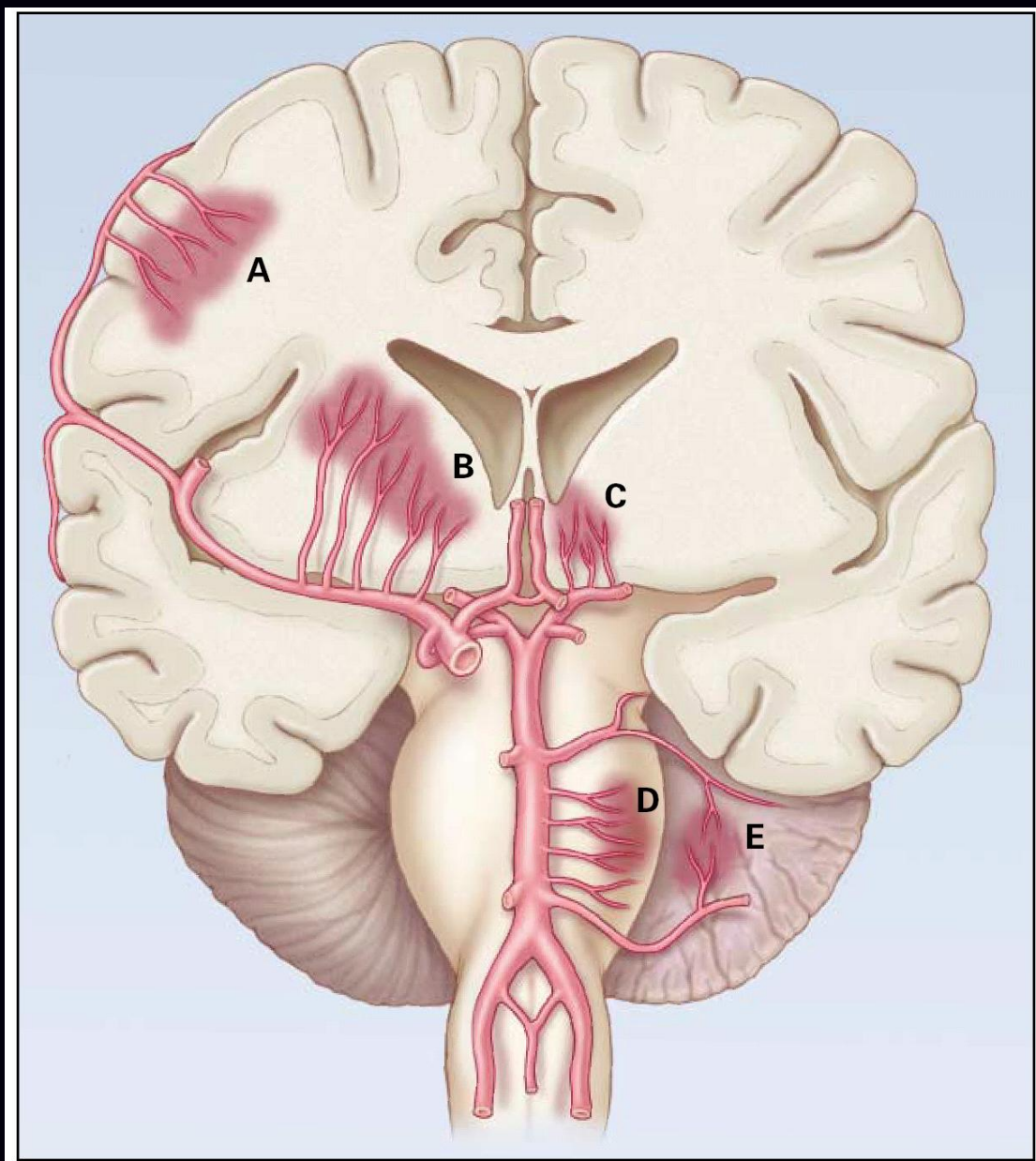
- **Patients with cerebellar hemorrhage who are deteriorating neurologically or who have brainstem compression and/or hydrocephalus from ventricular obstruction** should undergo surgical removal of the hemorrhage as soon as possible (Class I; Level of Evidence: B)
- **For patients presenting with lobar clots >30 mL and within 1 cm of the surface**, evacuation of supratentorial ICH by standard craniotomy might be considered (Class IIb; Level of Evidence: B)

Management of patient with ICH



Management of patient with ICH





SEDI TIPICHE

- A: emisferica
- B: gangliare
- C: talamica
- D: pontina
- E: cerebellare

Management of patient with VKA-associated ICH

1. Immediate VKA withdrawal
2. Vitamin K
3. Fresh frozen plasma (FFP)
4. Prothrombin complex concentrates (PCC)
5. Recombinant FVIIa

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The relevance of clinical examination (I)



Male, 84 years

Prior ischemic left hemispheric stroke (October 2011)

Persistent atrial fibrillation

No warfarin treatment for poor compliance

Acute worsening of right limbs weakness and speech disturbance

Neurological examination:
aphasia, right hemiparesis,
right gaze deviation

The relevance of clinical examination

Male, 84 years

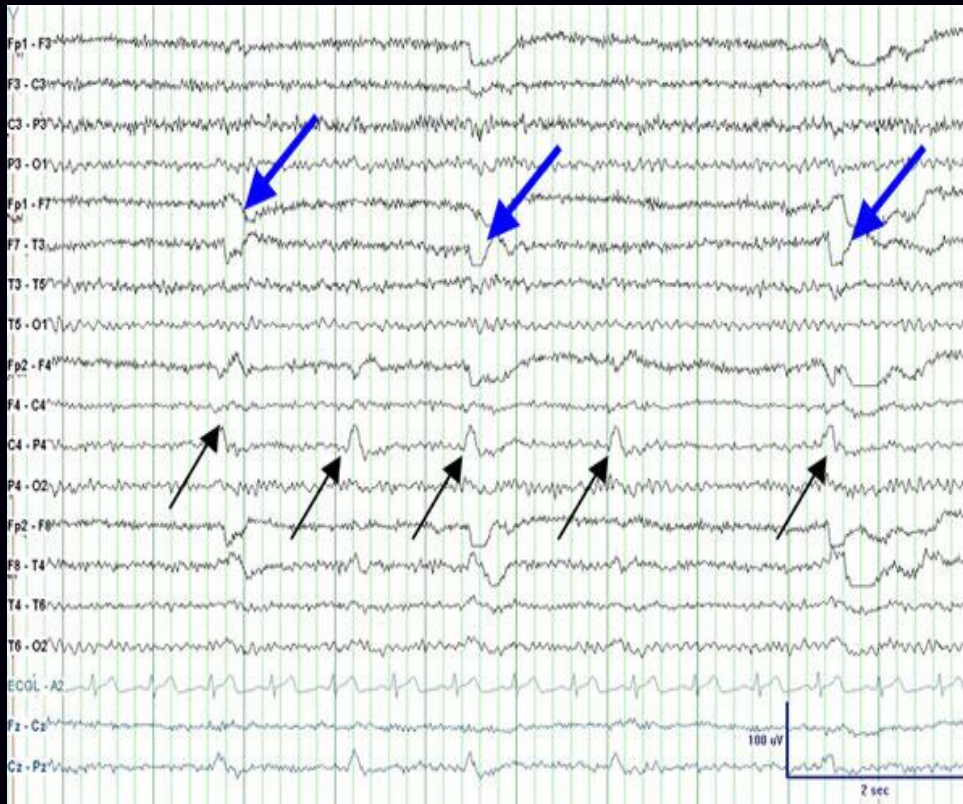
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Persistent atrial fibrillation

No warfarin treatment for poor compliance

Acute worsening of right limbs weakness and speech disturbance

Neurological examination:
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right gaze deviation



The relevance of clinical examination (II)

Male, 71 years with AFib on warfarin

- Dysarthria
- Severe paresis of left upper limb(1/5)
- Mild paresis of left lower limb (4/5)
- Central paresis of left VII cranial nerve
- Disturbance of superficial sensitivity in the left upper limb
- Complete paresis of horizontal conjugate gaze toward left without forced deviation

Esame obiettivo neurologico all'ingresso

- Disartria
- Paresi severa dell'arto superiore di sinistra (funzionalità residua 1/5)
- Paresi lieve arto inferiore di sinistra (funzionalità residua 4/5)
- Paresi del VII nervo cranico di sinistra a semeiologia centrale
- Deficit sensitivo (sensibilità superficiali) all'arto superiore di sinistra
- Paresi completa dei movimenti coniugati oculari orizzontali verso sinistra (senza deviazione forzata)

SP

CONTRAST:

SE:301

IM:56

16:12:07

ACCES#M429477

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DFOV

TILT:

Ospedale R.Silvestrini PG

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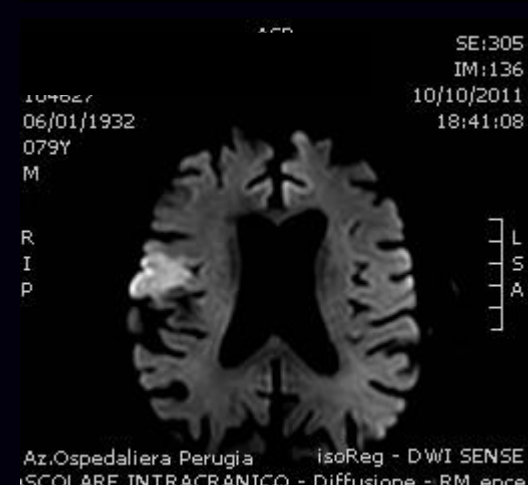
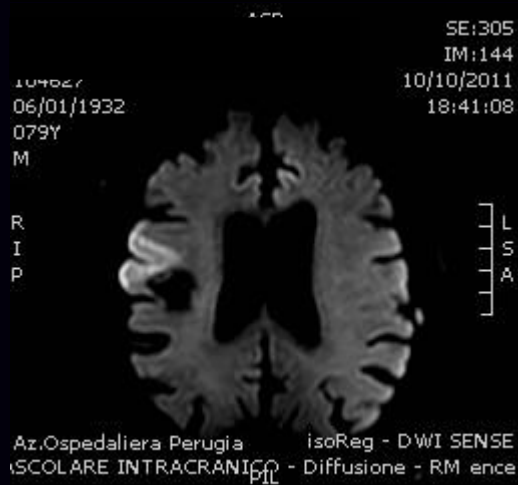
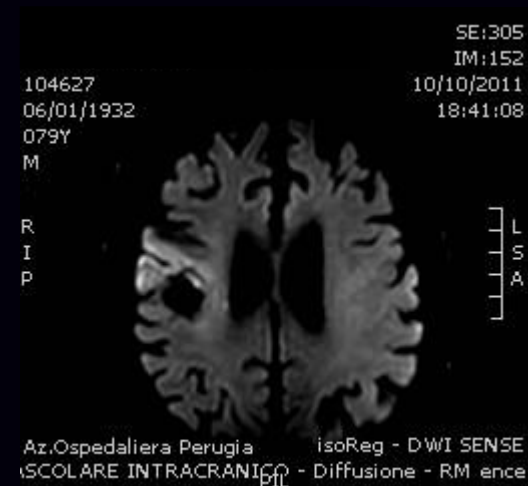
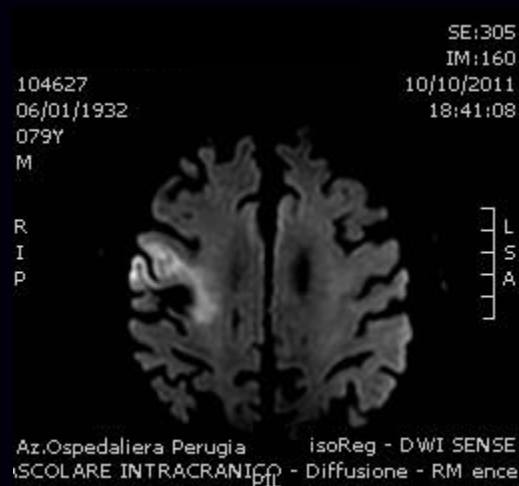
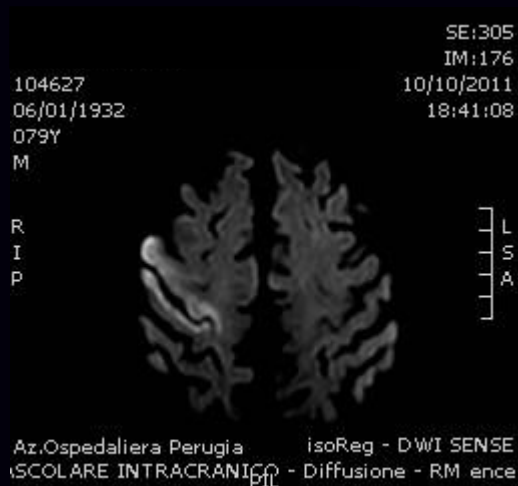
2mm

The relevance of clinical examination (II)

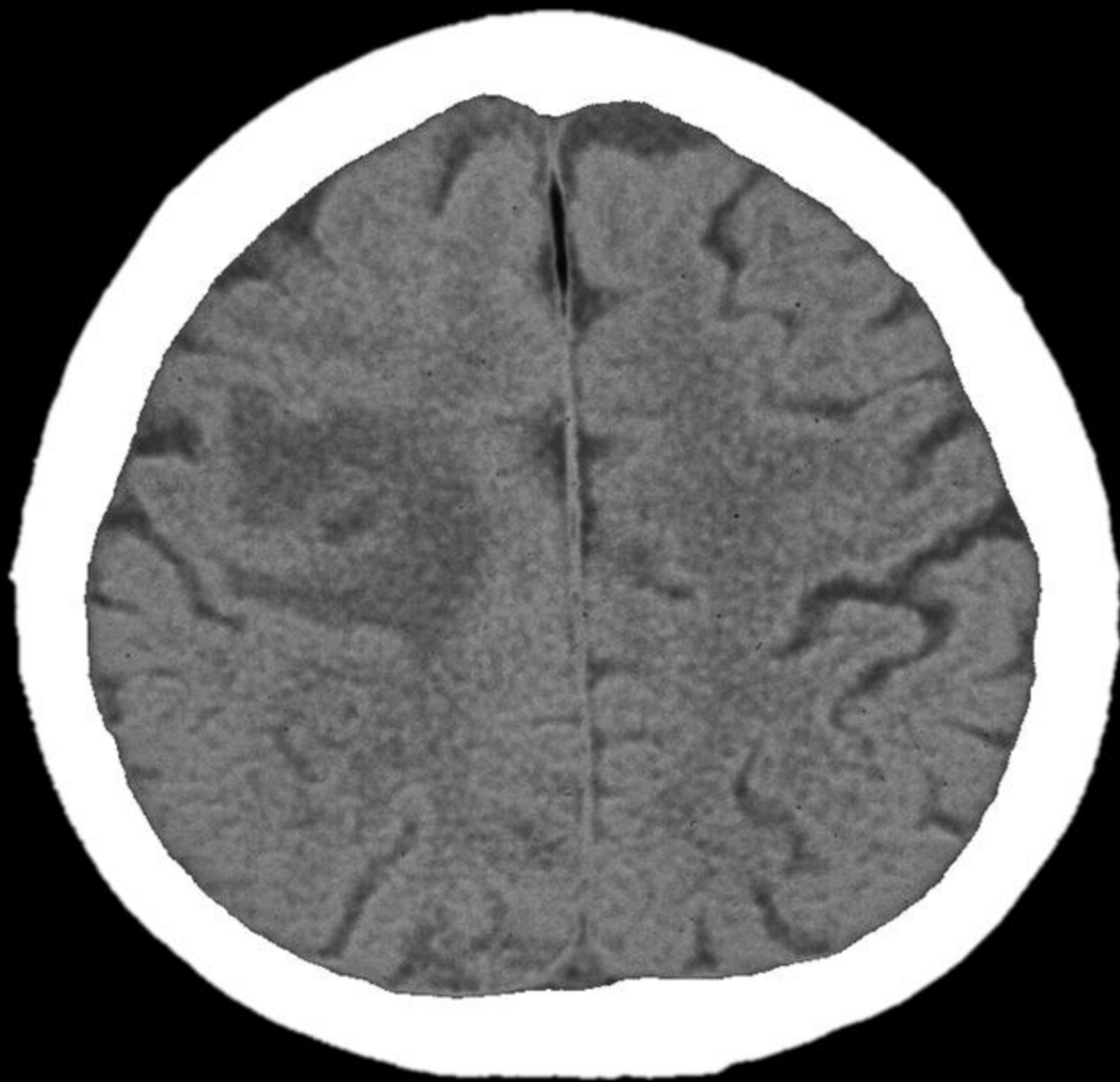
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RM DWI: ischemia recente!!!



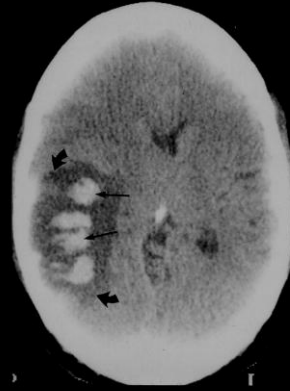
TC-Scan: 03.01.2012



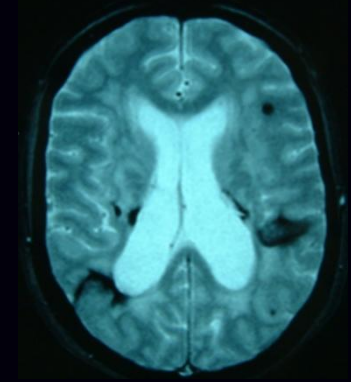
Cardioembolic



Venous



CAA

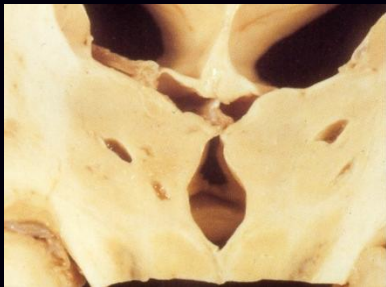


Ischemic Stroke

Unknown
cause

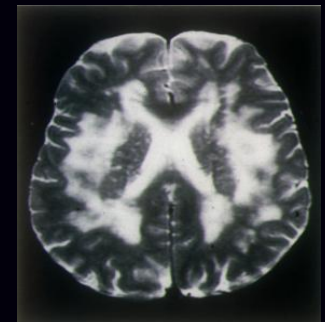


Atherothrombotic



Small vessel disease

Hemodynamic



Many other pathologies

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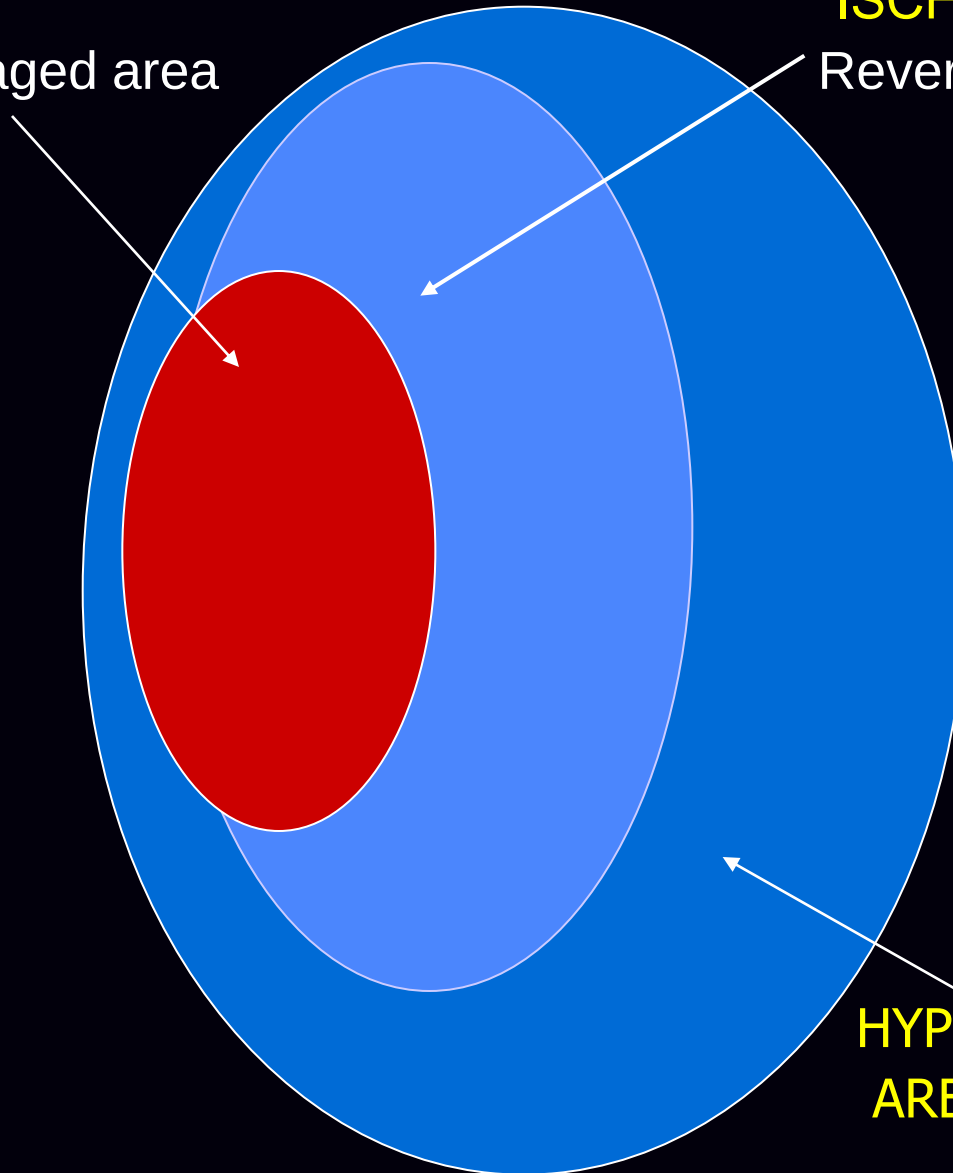
Functional changes during acute cerebral ischemia

“CORE”

Irreversibly damaged area

“ISCHEMIC PENUMBRA”

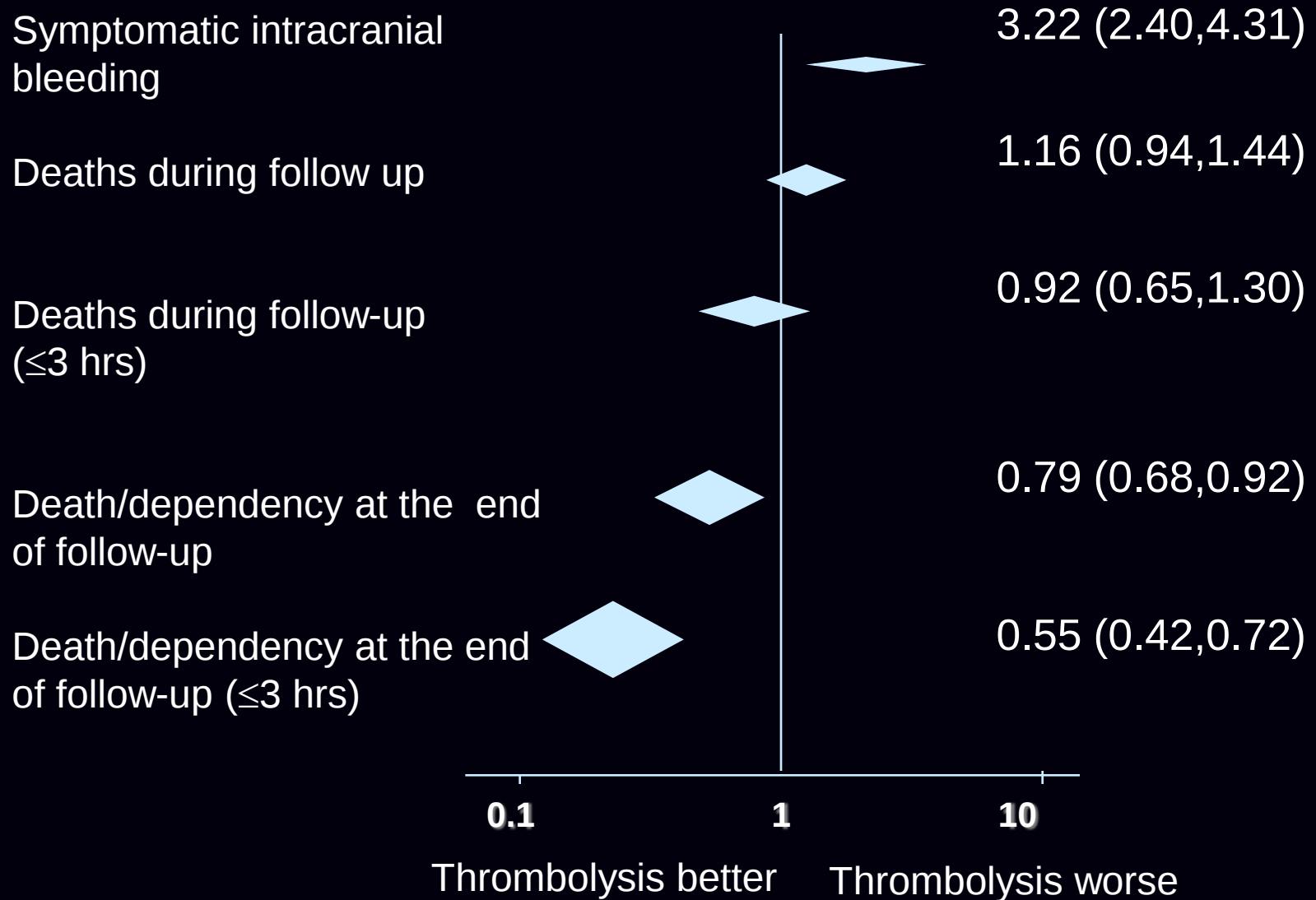
Reversibly damaged area



**HYPEREMIC PRESERVED
AREA**

Thrombolytic trials with rt-PA (N=2955)

Wardlaw, Cochrane Database Syst Rev 2003



NNT and NNH with rt-PA

Number Needed to Treat

< 6 hrs

18

< 3 hrs

7

Number Needed to Harm

34

Current guidelines

For eligible patients, we recommend the administration of iv t-PA in a **dose of 0.9 mg/Kg (maximum 90 mg)**, with 10% of the total dose given as an initial bolus and the remainder infused over 60 minutes, provided that treatment is initiated within 3 (4.5) hours of clearly defined symptoms

ECASS 3

Main results

	rt-PA (n= 418)	Placebo (n = 403)
m-RS (0-1)	52.4%	45.2%
Symptomatic ICH	2.4%	0.2%
Death	7.7%	8.4%

Thrombolysis- Selection of patients

Age 18-80

Acute focal neurological deficit (not improving)

Stroke severity, NIH SS < 26

Onset >30 minutes, ≤ 3 hours

No recent stroke, trauma, surgery, GI/urinary bleeds

No recent (<48 hours) anticoagulation

BP $\leq 185/110$

Normal PT& APTT & platelets count

Blood glucose (2.7-22.2)

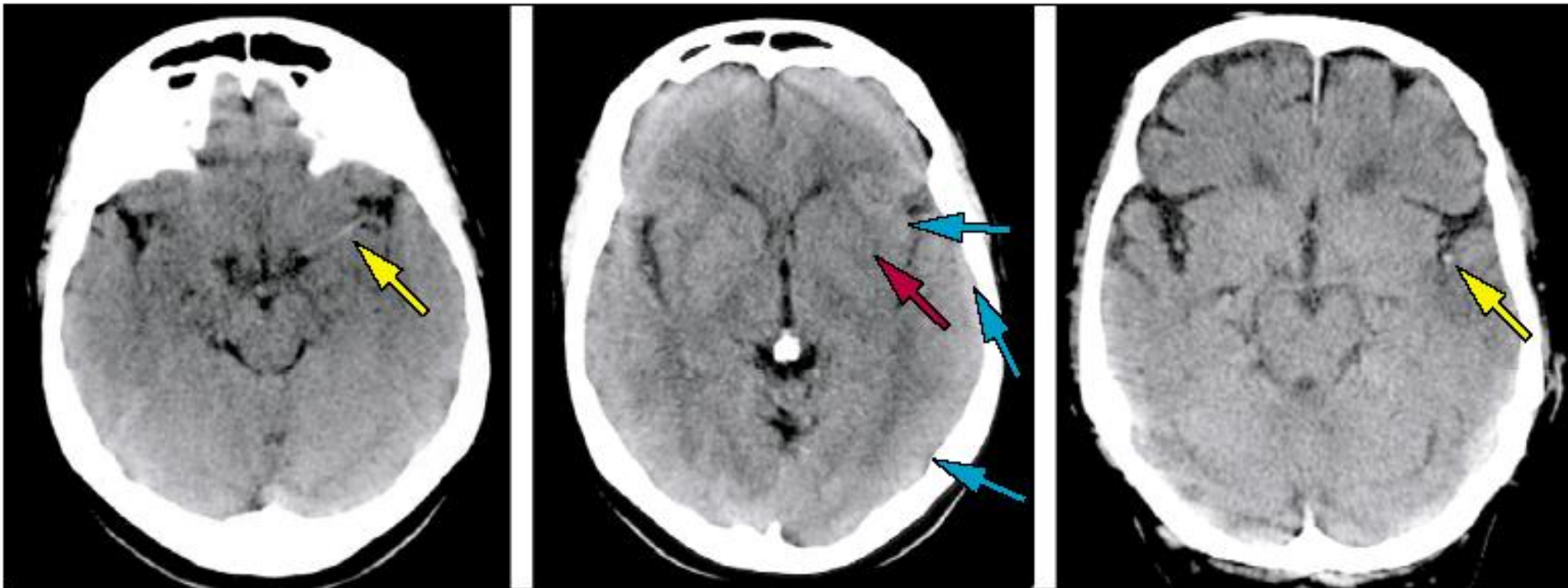


Figure 2: Early CT signs in acute MCA stroke
Left and middle: Hyperdense left MCA sign (yellow arrow), hypoattenuated left basal ganglia (red arrow), and cortical swelling (blue arrows) in the same patient.
Right: Dot sign (yellow arrow) in the left sylvian fissure.

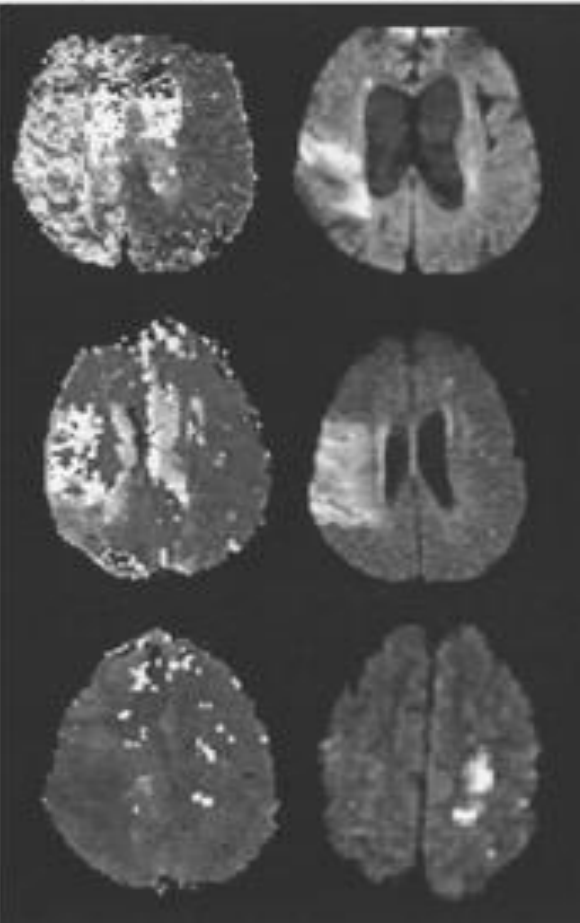
PWI lesion > DWI lesion

PWI lesion = DWI lesion

PWI lesion < DWI lesion

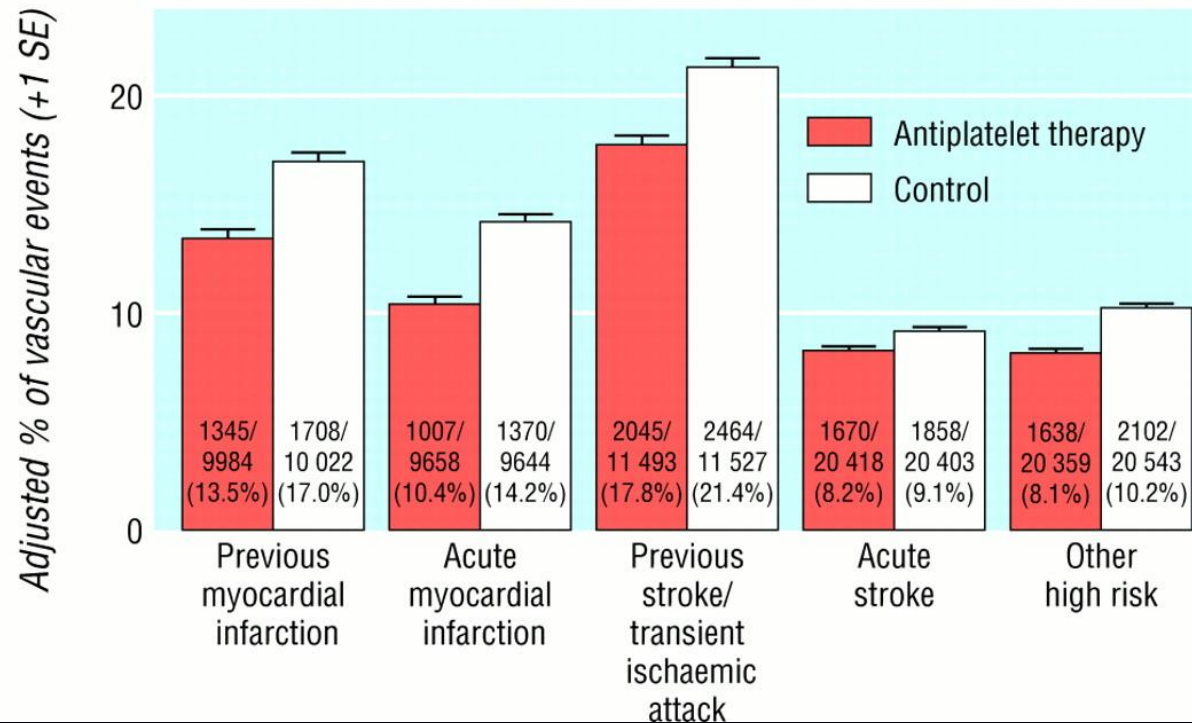
PWI

DWI



Antithrombotic Trialists' Collaboration

Benefit per 1000 patients (SE):	36 (5)	38 (5)	36 (6)	9 (3)	22 (3)
Mean months of treatment:	27	1	29	0.7	22
P value:	<0.0001	<0.0001	<0.0001	0.0009	<0.0001



9 eventi vascolari ogni 1000 pazienti trattati per 3 settimane

Anticoagulation for acute stroke

Mortality and disability

Anticoagulants vs. aspirin or placebo

OR (random) = 1.01 (0.82 – 1.24)

Mortality and disability

Anticoagulants vs aspirin

OR (random) = 1.14 (0.95 – 1.38)

Hemorrhagic transformation

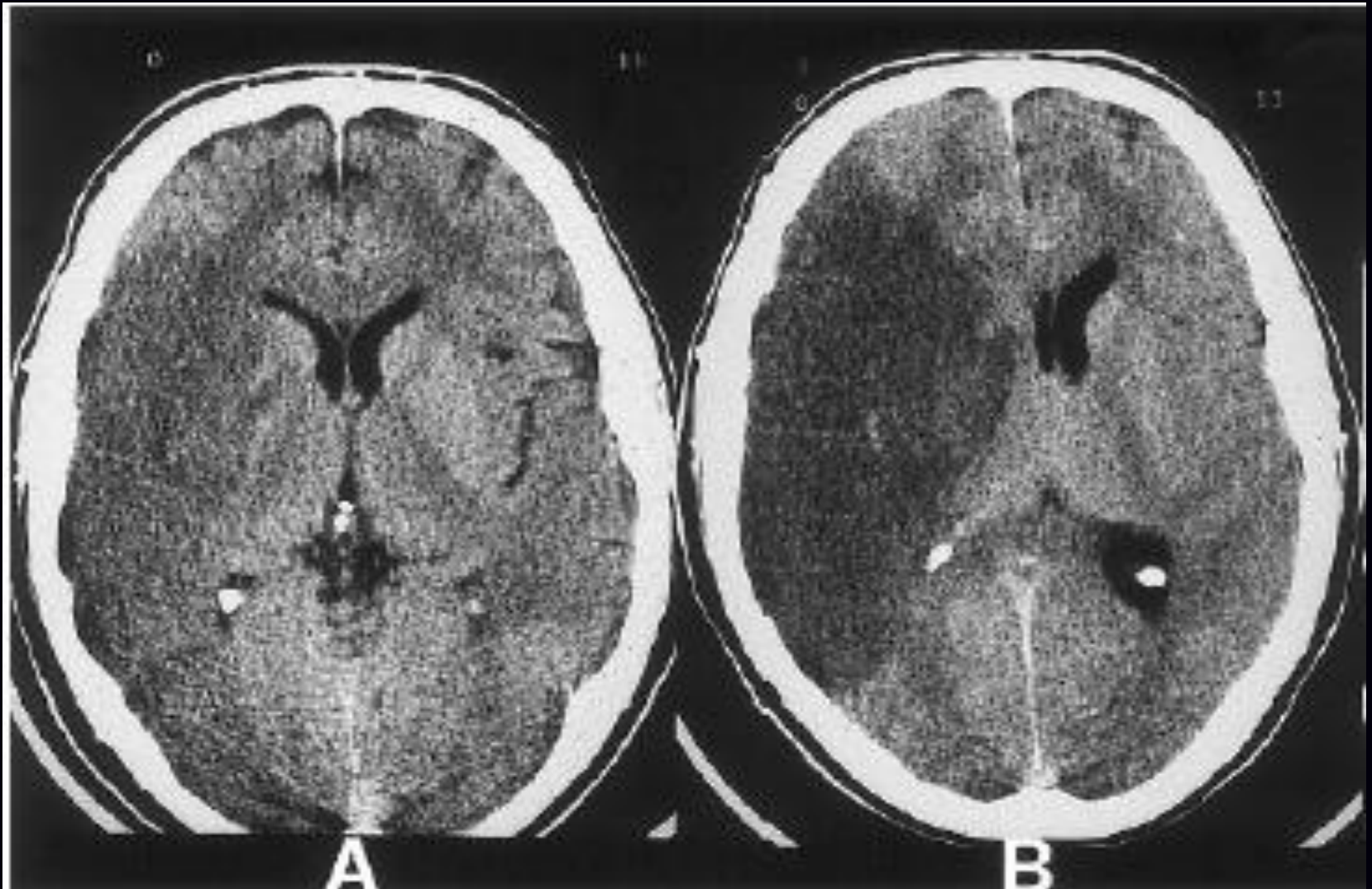
Anticoagulant vs aspirin or placebo)

OR (random) = 3.76 (2.03 – 6.96)

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Management of patient with acute stroke



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Modalità di finestra divisa

AS

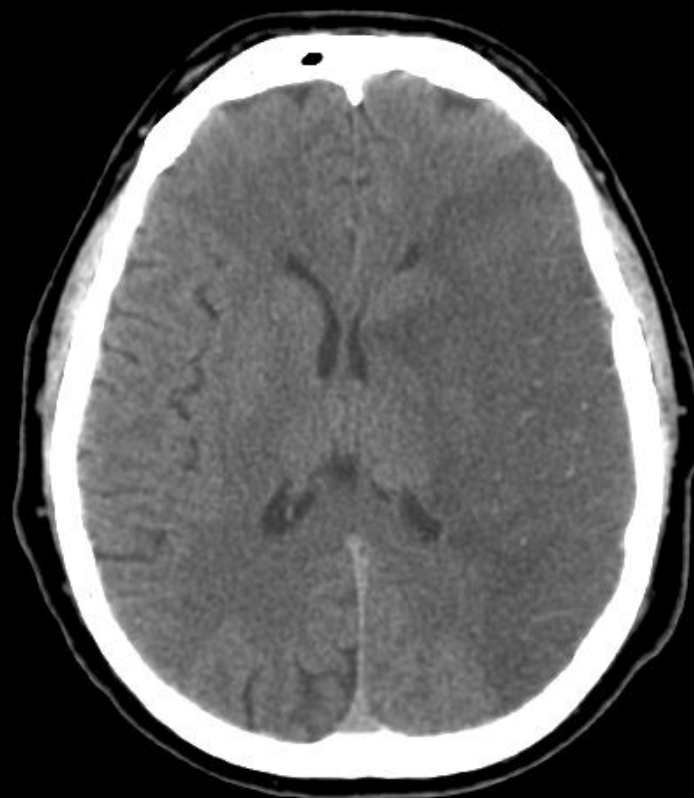
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SE: 2 IM: 34

20-set-2010

11.40.59

9-apr-1951 M

R
1
2
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1
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5

PI

Ospedale Silvestrini PG
DEFAULT

W: 116, C: 30

MAG: 115%

4.1:1

Visualizza le immagini...

ID utente : 8179, Team : Unrestricted Team



10.2.1.28

00:01



VIN
Cc
31-lug-1960 M

A125

Cod.esame: M132729
SE: 4 IM: 42
24-nov-2010
6.49.13

R
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Ospedale R.Silvestrini PG
DEFAULT

P125

W: 148, C: 30
MAG: 115%
3.7:1

Visualizza le immagini...

ID utente : 8179, Team : Unrestricted Team



10.2.1.28

00:01

Studio Anteprema Visualizza Referto Conferenza



VI
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31-lug-1960 M

S168

Cod.esame: M132729
SE: 401 IM: 54
24-nov-2010
6.49.13

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P

Ospedale R.Silvestrini PG
DEFAULT

W: 80, C: 40
MAG: 115%
4.9:1

I52

Visualizza le immagini...

ID utente : 8179, Team : Unrestricted Team



10.2.1.28

00:04

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In-hospital complications of acute stroke

January 1° 2010 – September 30 2011 (administrative data)

	(n=607)	%
Pneumonia	76	12.5
Urinary tract infection	51	8.4
Venous thromboembolism	50	8.2
Acute heart failure	31	5.1
Cardiac arrhythmias	28	4.6
Upper GI hemorrhage	15	2.5
Acute myocardial infarction	13	2.1
Acute limb ischemia	8	1.3

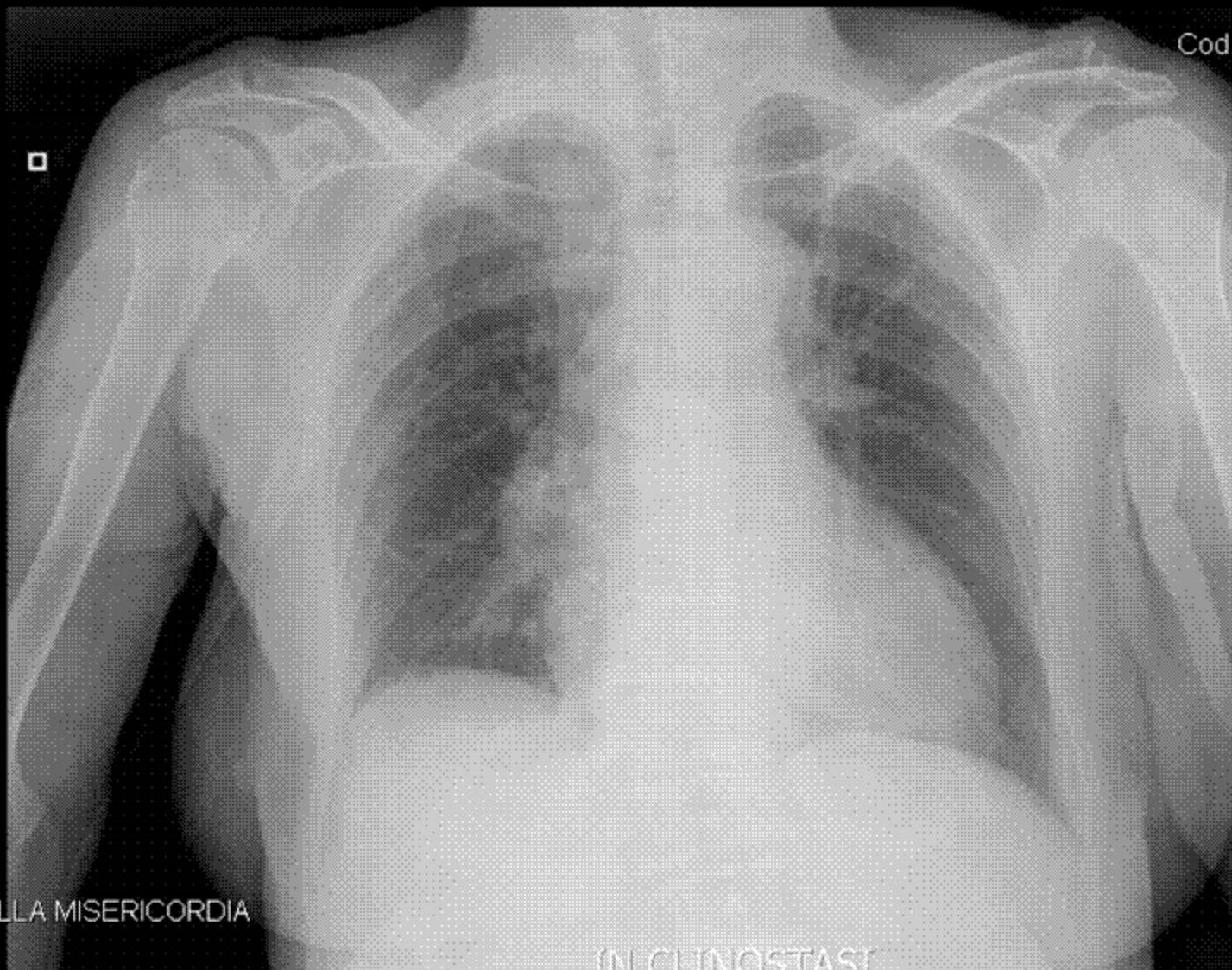
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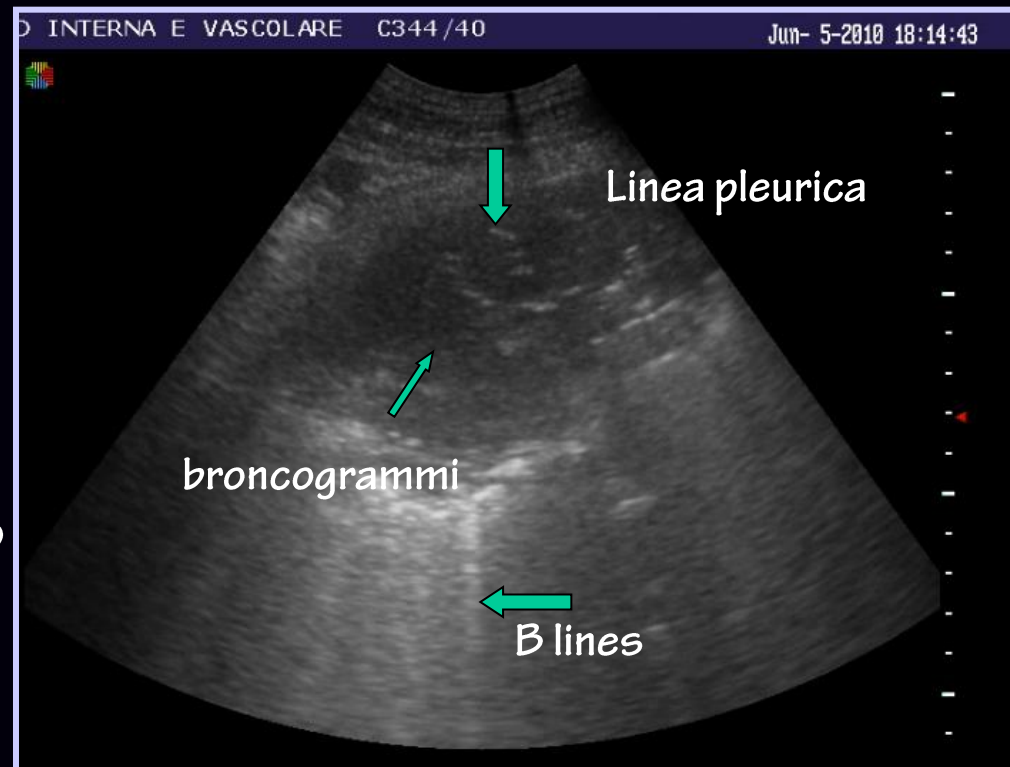
DELLA MISERICORDIA

IN CLINOSTAST



Segni ecografici di polmonite

- Area ipoecogena
- Di dimensione variabili
- Di forma irregolare
- A contatto con la linea pleurica
- Circondata da B lines
- Contenente broncogrammi
- Associata o meno a versamento pleurico



Stroke: cardiovascular complications

Cardiovascular adverse events

Acute coronary syndromes

Arrhythmias

Sudden death

Congestive heart failure

Venous thromboembolism

Uncontrolled hypertension

Acute arterial thromboembolism

Bleeding associated with antithrombotic treatment

Cardiovascular events after acute stroke

ECG abnormalities occur in 90% of patients

ST- segment depression

T-wave inversion

QT Dispersion

Consequence of acute myocardial ischemia

vs.

non specific ECG findings

Cardiovascular events after acute stroke

Arrhythmias

352 ischemic and 98 hemorrhagic stroke

New onset ECG abnormalities in 75% of patients

Definite arrhythmias in 28.7% of the cases

21.9% of ischemic stroke (R 26.8%*, L 14.3%)

20.4% of the hemorrhagic stroke

37.5% subarachnoid hemorrhage

* Cardiac control rhythm site in the MCA territory

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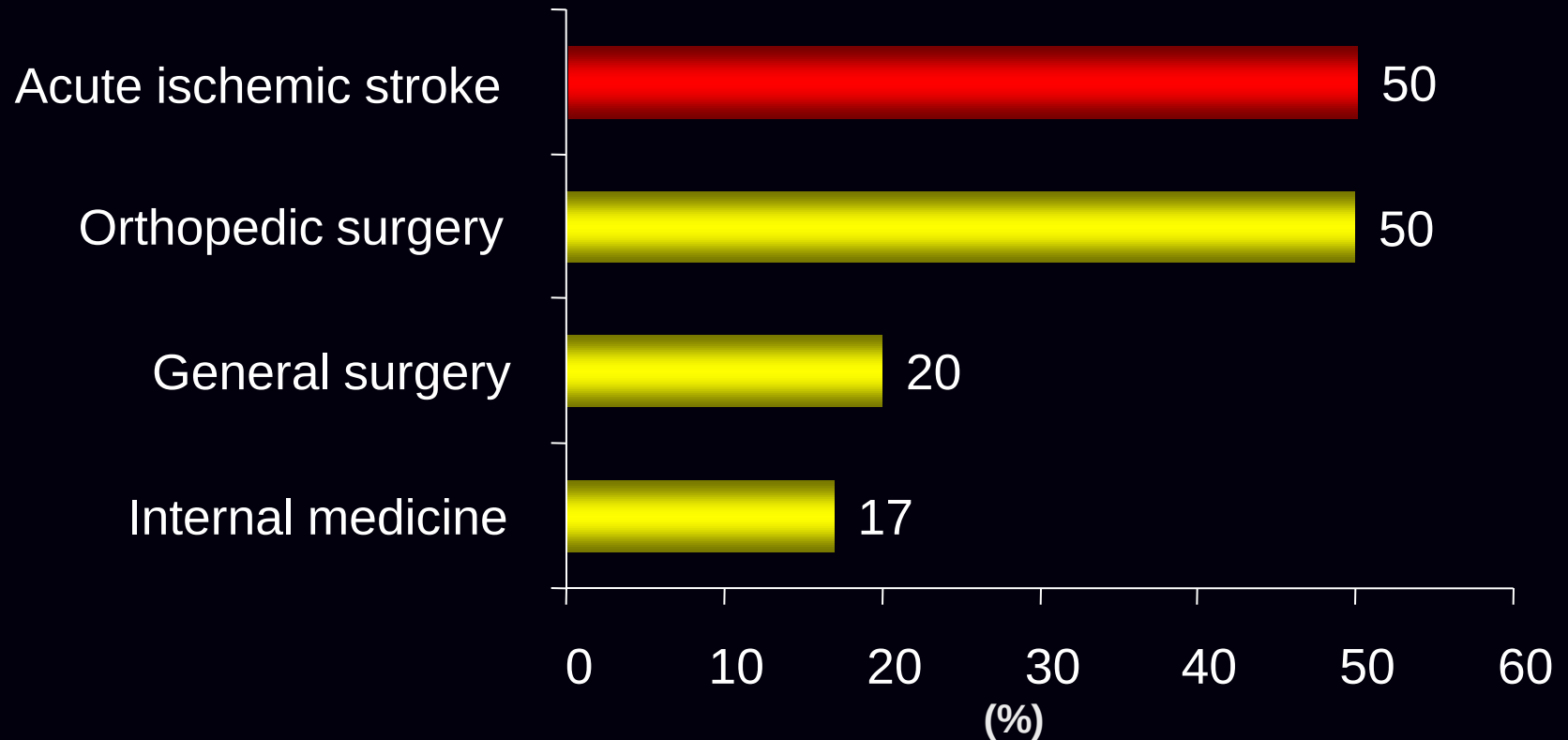
* Cardiac control rhythm site in the MCA territory

Stroke–induced myocardial injury

1. Absence of primary cardiac causes
2. Associated with intense sympathetic nervous system activation
3. Particularly common in ischemic lesions of the insula (both right and left sides)

VTE without prophylaxis in hospitalized patients

Venous thromboembolism



Geerts et al. Chest, 2004; Leizorovicz et al. Circulation. 2004

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Organized inpatient (stroke unit) care for stroke (Cochrane review)

Stroke Units vs General Wards

N = 4911

mortality

OR 0,86; IC₉₅ 0,71-0,94; P=0,005

mortality/nursing home

OR 0,80; IC₉₅ 0,71-0,90; P=0,0002

dependency

OR 0,78; IC₉₅ 0,68-0,89; P=0,0003

Treatment options for ischemic stroke

Conclusions

	Death/dependency	Utility
Stroke Unit	0.78 (0.68 - 0.89)	Very wide
Aspirin	0.94 (0.91 - 0.98)	Wide
Thrombolysis	0.66 (0.53 - 0.83)	Narrow

Ineffective: Anticoagulation

Unproven: Neuroprotection