Place de l'iconographie cérébrale systématique dans la prise en charge de l'endocardite infectieuse

Xavier Duval

Hôpital Bichat Claude Bernard, Paris

Instituts thématiques

Inserm

Institut national de la santé et de la recherche médicale

ASSISTANCE PUBLIQUE HÔPITAUX DE PARIS

Neurological complications of IE

- 2nd most frequent cause of death
- Make patient management more complex
  - Raise hard-to-answer questions

Vascular

- Ischemic events
  - Stroke
  - Transient ischemic attack (TIA)
  - Silent embolism
- Hemorrhagic events
  - H. stroke
  - Microbleeds
  - Sub arachnoidal H
- Aneurysms

Infectious

- Meningitis
- Abscess

Other events

- Headache
- Toxic encephalopathy
- Seizures

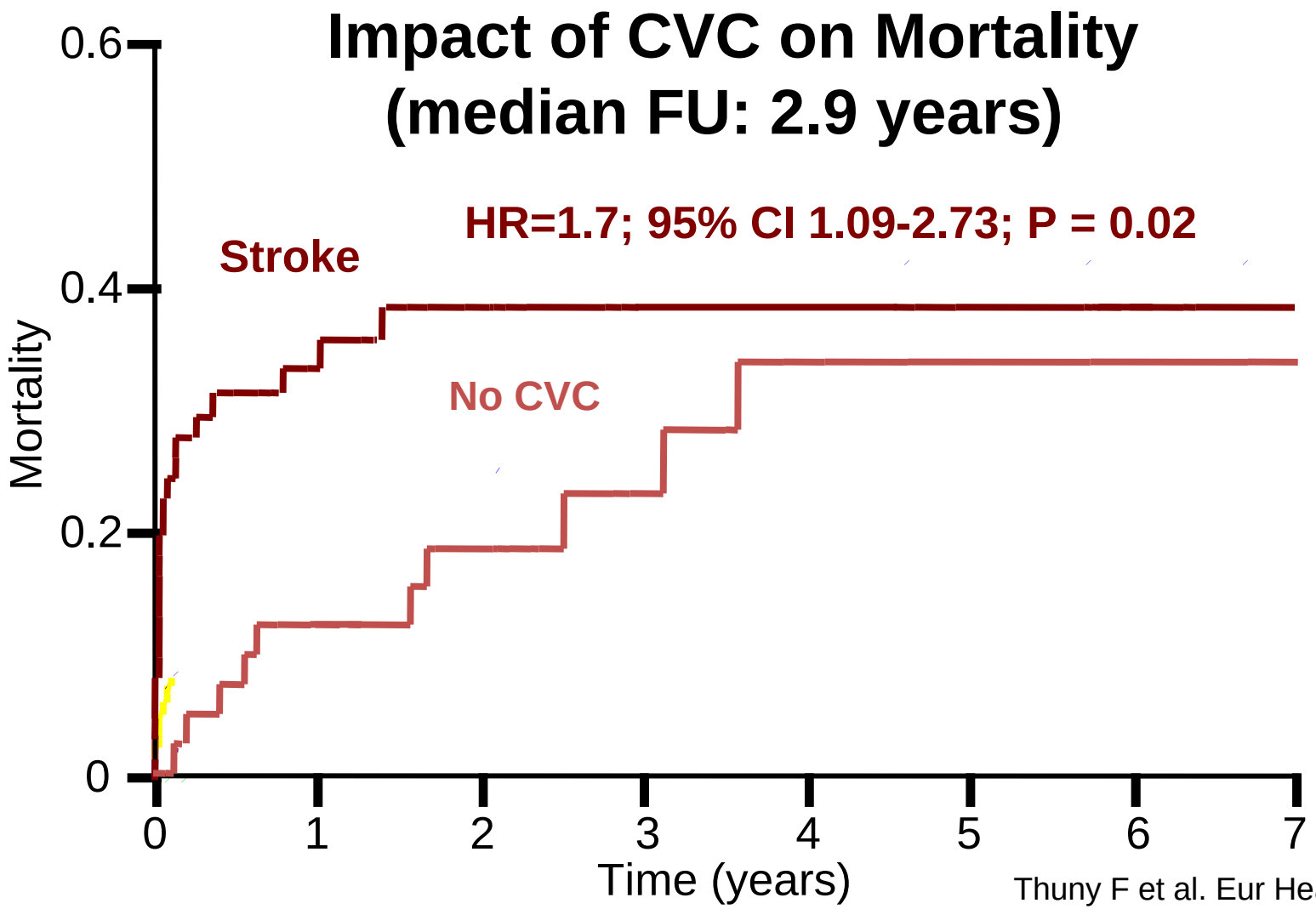
IE-**Complications-** 2008 France

	Native valves	Prosthetic V.	Total n (%)
Cardiac complications			**211 (53%)**
Cerebral complications*			**113 (26%)**
Cerebral emboli			97 (23%)
Cerebral hemorrhage			24 (6%)
Aneurysms			16 (4%)
Extra cerebral emboli			**145 (34%)**
Spondylodiskitis			
Septic choc			

IE-**Complications-** 2008 France

	Native valves	Prosthetic V.	Total n (%)
Cardiac complications			**211 (53%)**
Cerebral complications*	**79 (23%)**	**34 (36%)**	**113 (26%)**
Cerebral emboli	67 (20%)	30 (32%)	97 (23%)
Cerebral hemorrhage	17 (5%)	7 (8%)	24 (6%)
Aneurysms	12 (4%)	4 (4%)	16 (4%)
Extra cerebral emboli	**118 (35%)**	**27 (28%)**	**145 (34%)**
Spondylodiskitis			
Septic choc			

What is the clinical impact of NC ?



Thuny F et al. Eur Heart J. 2007

European Heart Journal (2009) **30**, 2369–2413
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No other recommandation that cardiac echography:

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Diagnosis criteria

MAJOR CRITERIA

Blood cultures positive for IE:

- Typical microorganisms consistent with IE from two separate blood cultures:
  Viridans streptococci, *Streptococcus bovis*, HACEK group, *Staphylococcus aureus*; or
  Community-acquired enterococci, in the absence of a primary focus;

  or
- Microorganisms consistent with IE from persistently positive blood cultures:
  At least two positive blood cultures of blood samples drawn > 12 h apart; or
  All of three or a majority of ≥ 4 separate cultures of blood (with first and last sample drawn at least 1 h apart)

80-85 % hémocultures positives

60% critère majeur de Duke

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Evidence of endocardial involvement

- Echocardiography positive for IE
  Vegetation - Abscess - New partial dehiscence of prosthetic valve
- New valvular regurgitation

80 % Critère majeur de Duke

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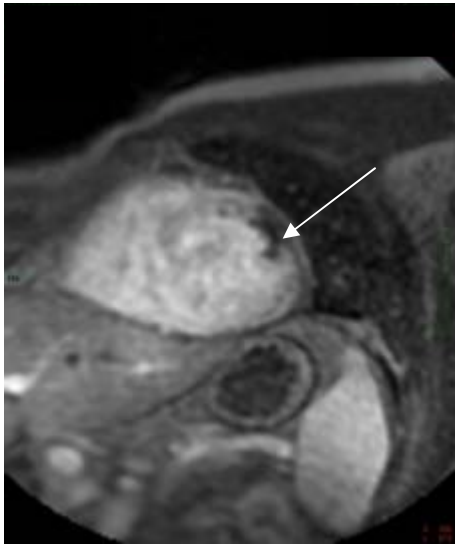
MINOR CRITERIA

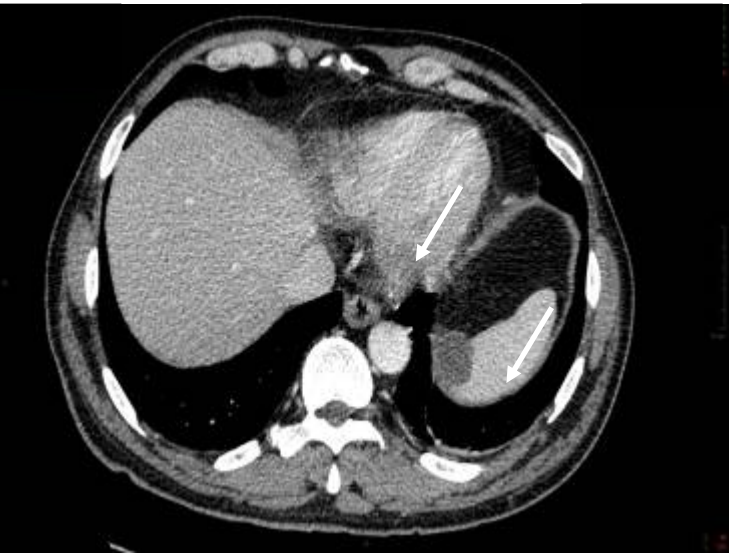
- Predisposition: predisposing heart condition, injection drug use
- Fever: temperature > 38°C
- Vascular phenomena: major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial haemorrhages, conjunctival haemorrhages, Janeway lesions
- Immunologic phenomena: glomerulonephritis, Osler's nodes, Roth's spots, rheumatoid factor
- Microbiological evidence: positive blood culture but does not meet a major criterion or serological evidence of active infection with organism consistent with IE

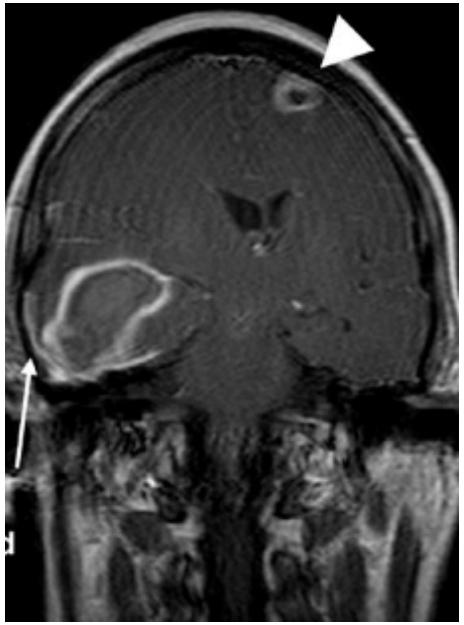
30-40% des cas

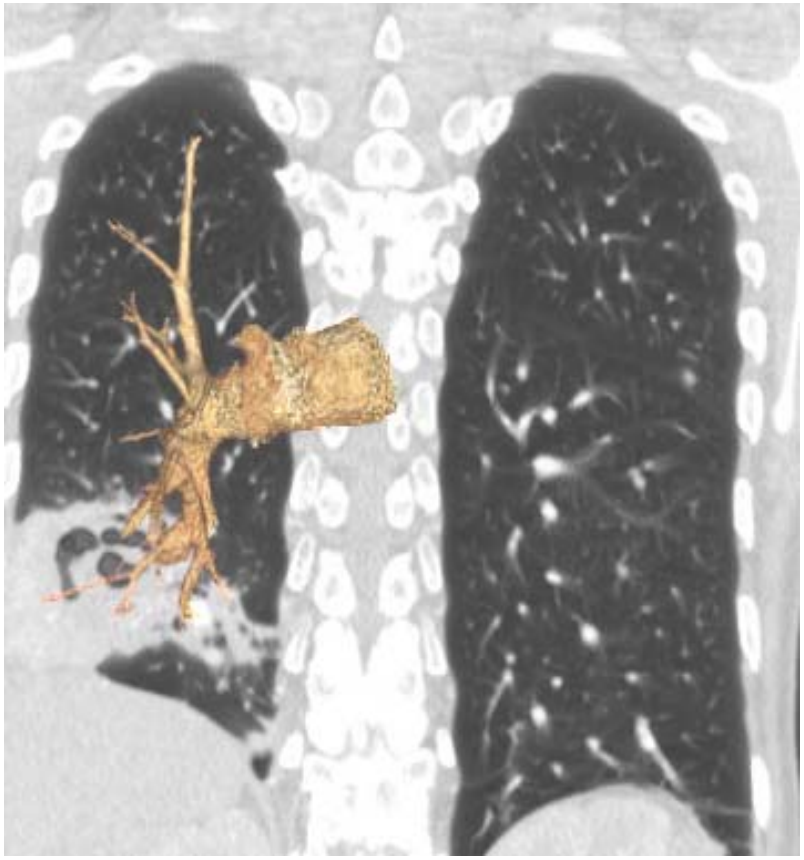
Diagnosis of IE is definite in the presence of	Diagnosis of IE is possible in the presence of
2 major criteria, or *1 major and 3 minor criteria, or* *5 minor criteria*	*1 major and 1 minor criteria, or* *3 minor criteria*

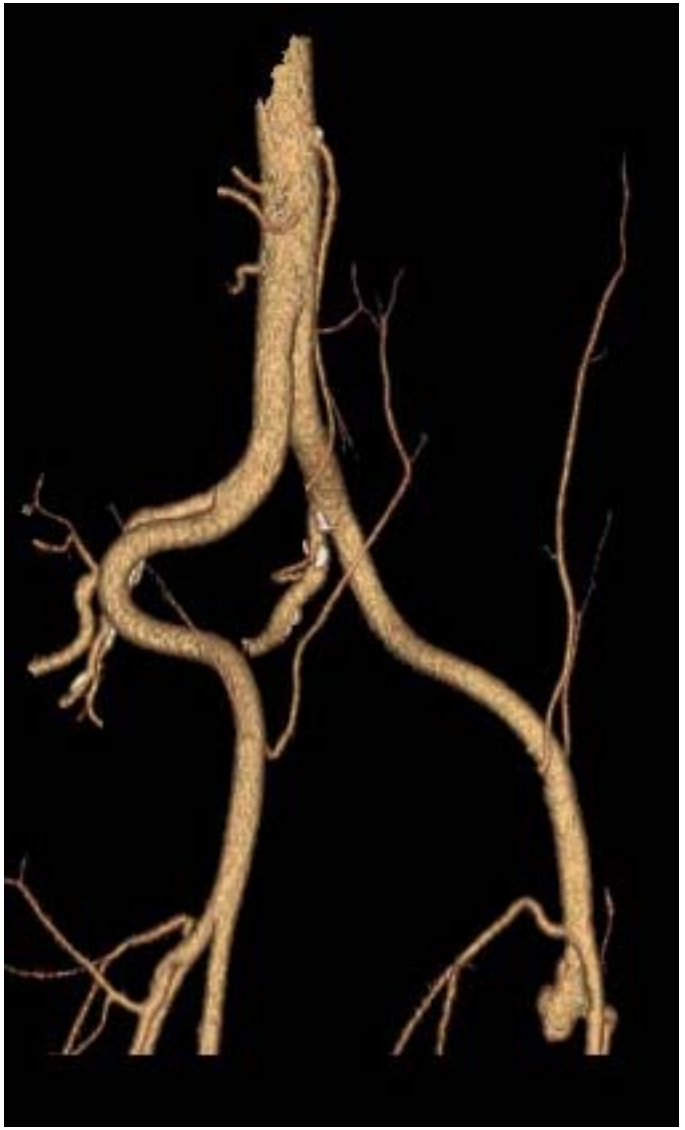
Vascular phenomena (emboli, aneurysm, infarcts)











Systematic cerebral CT scan

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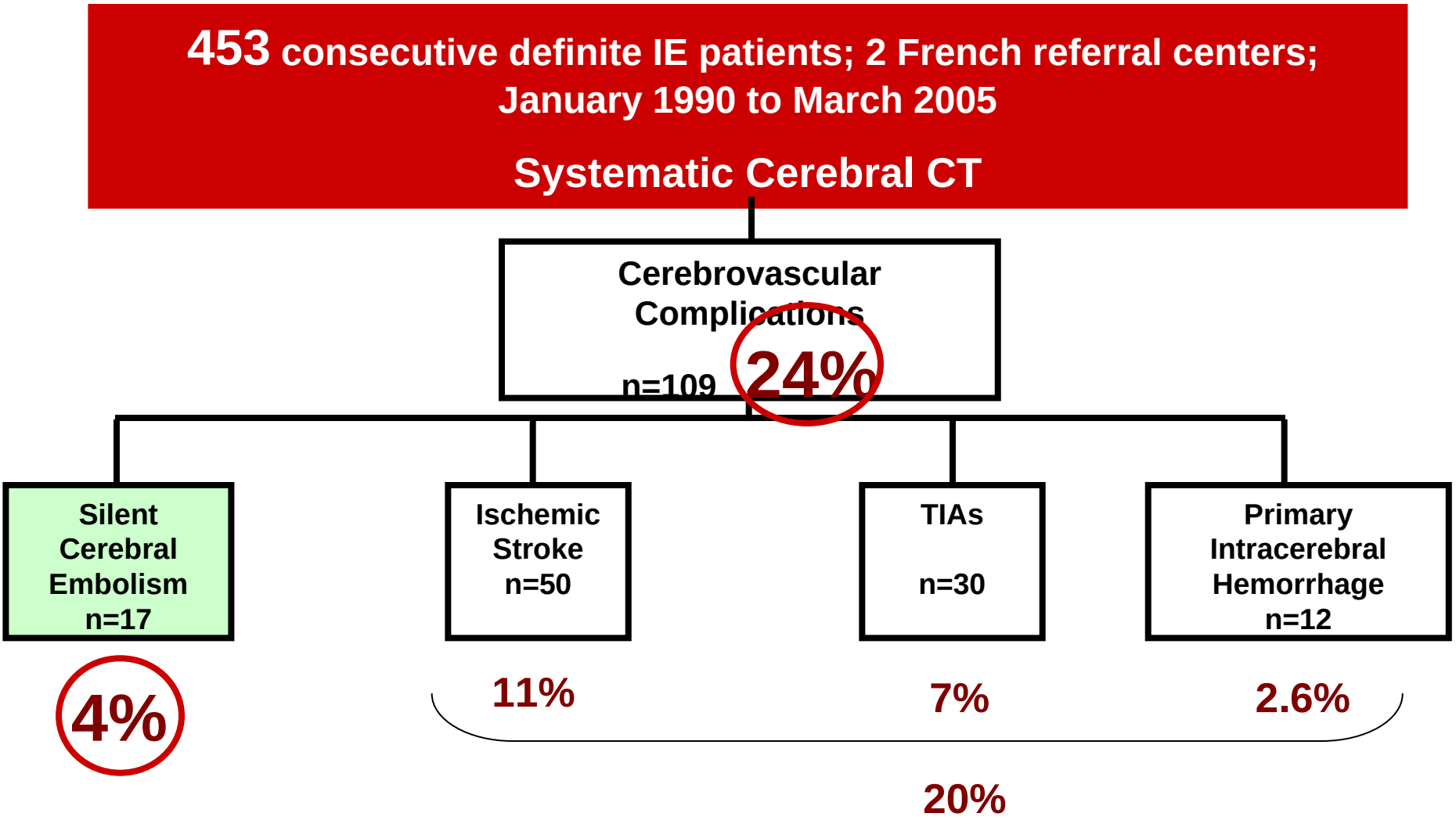

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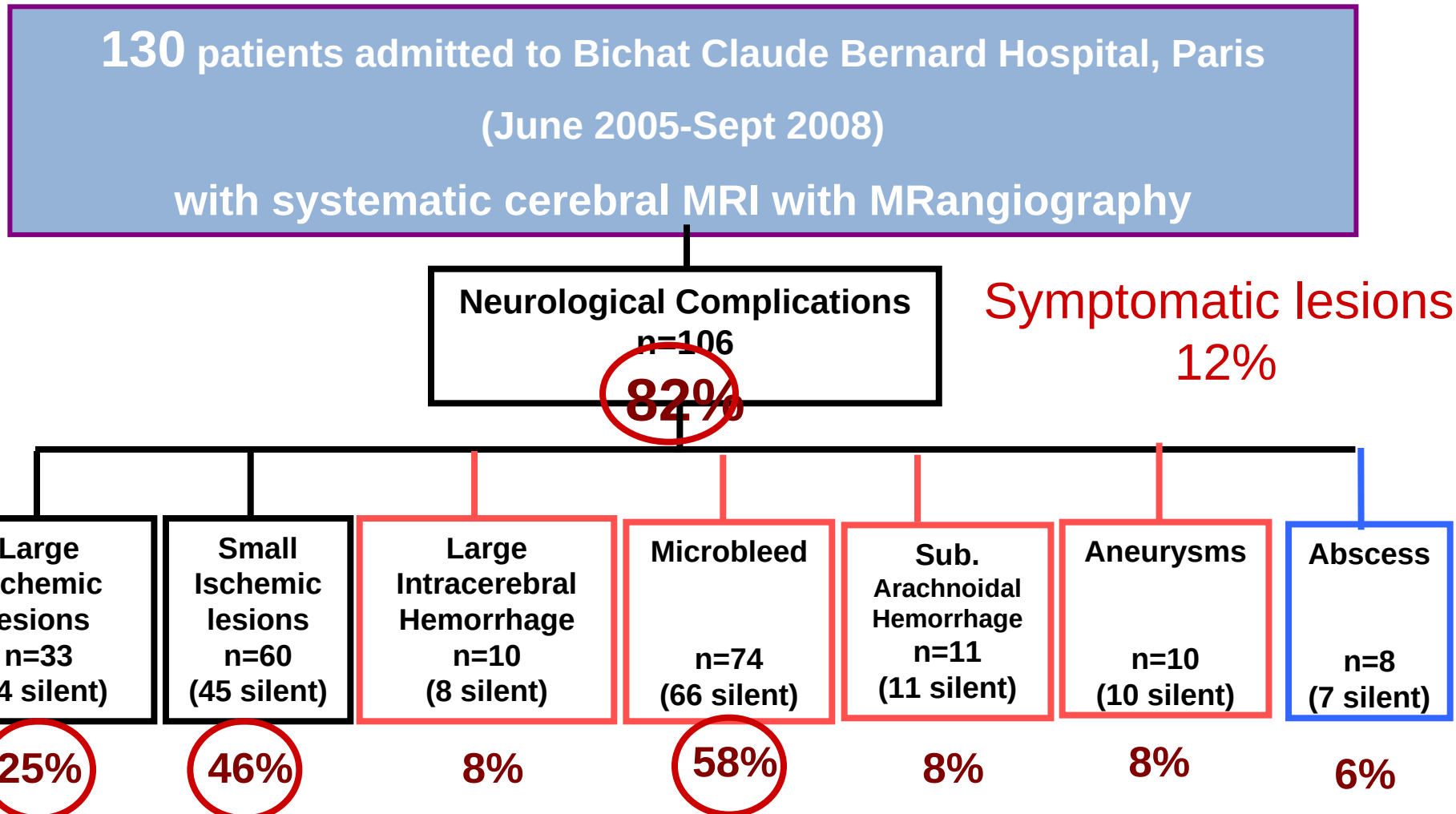

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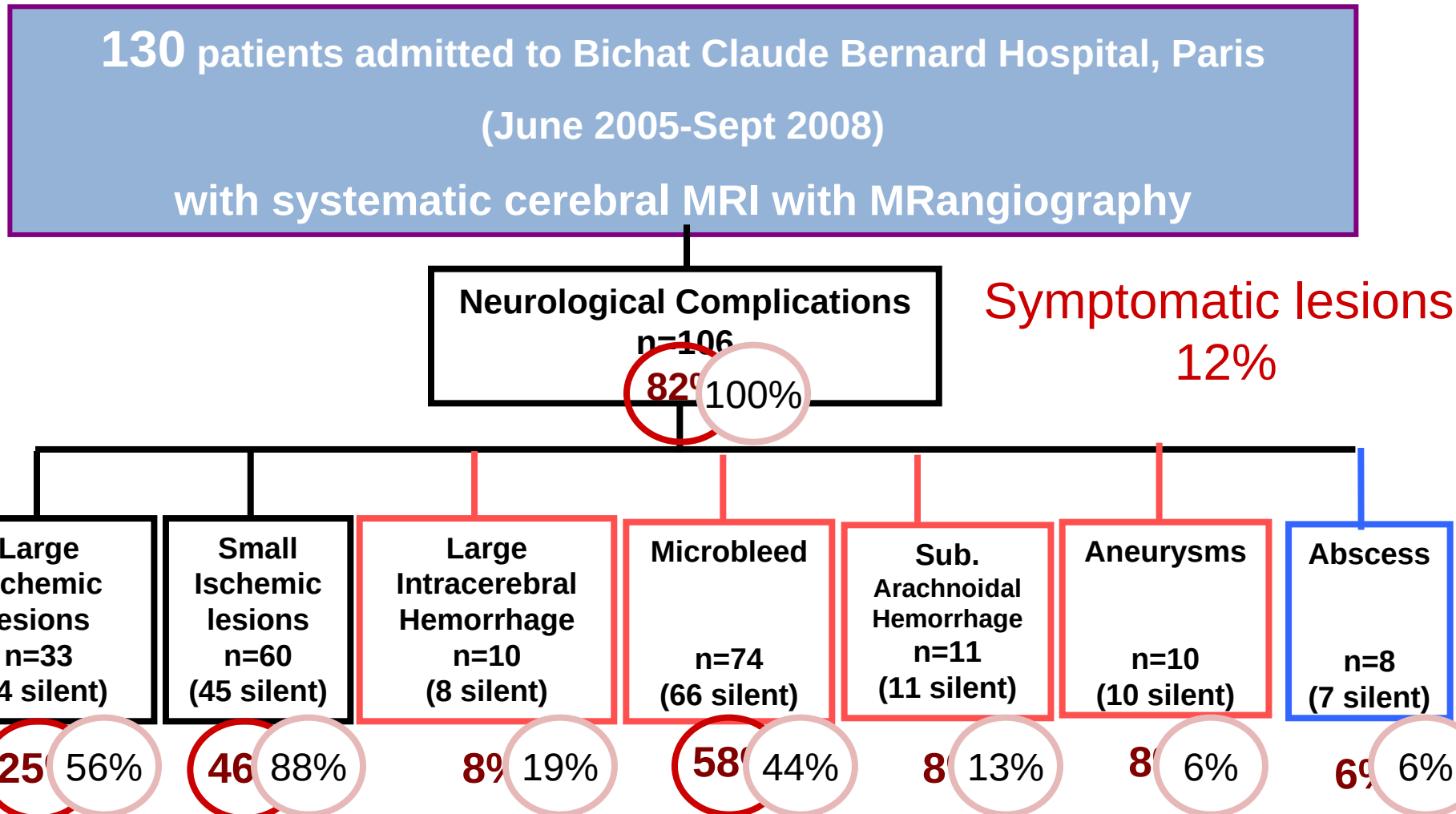
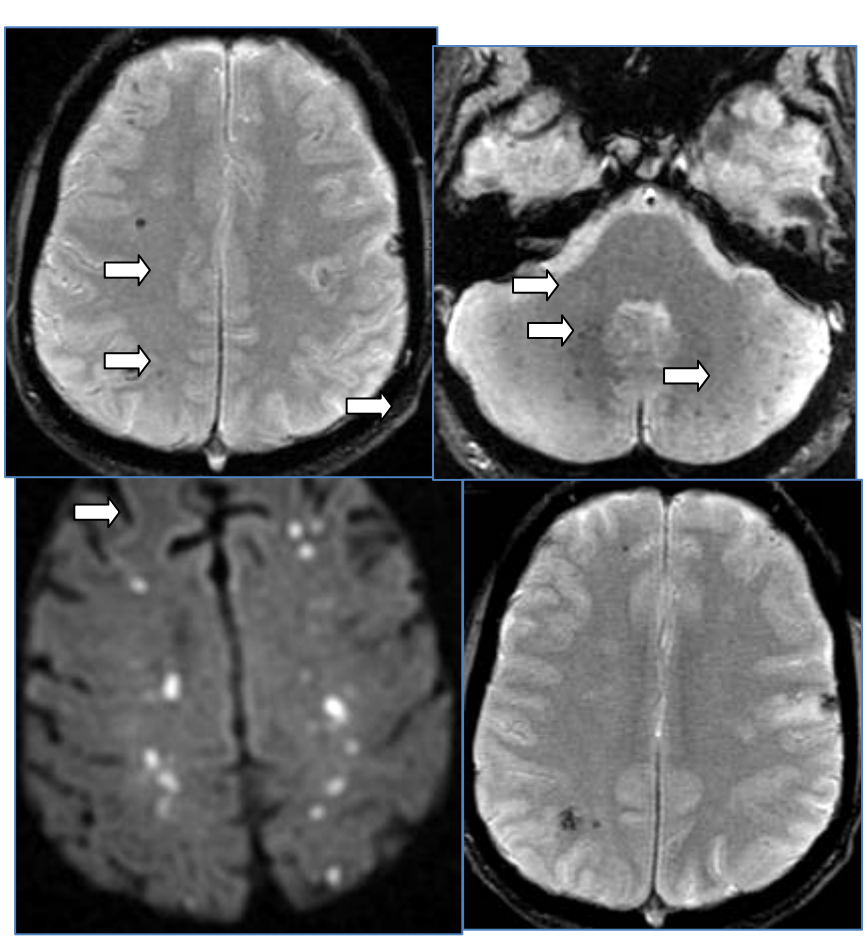


MRI in a definite mitral native valve *Staphylococcus aureus* IE showing multiple cerebral microbleeds (white arrows) in a 40 year-old patient



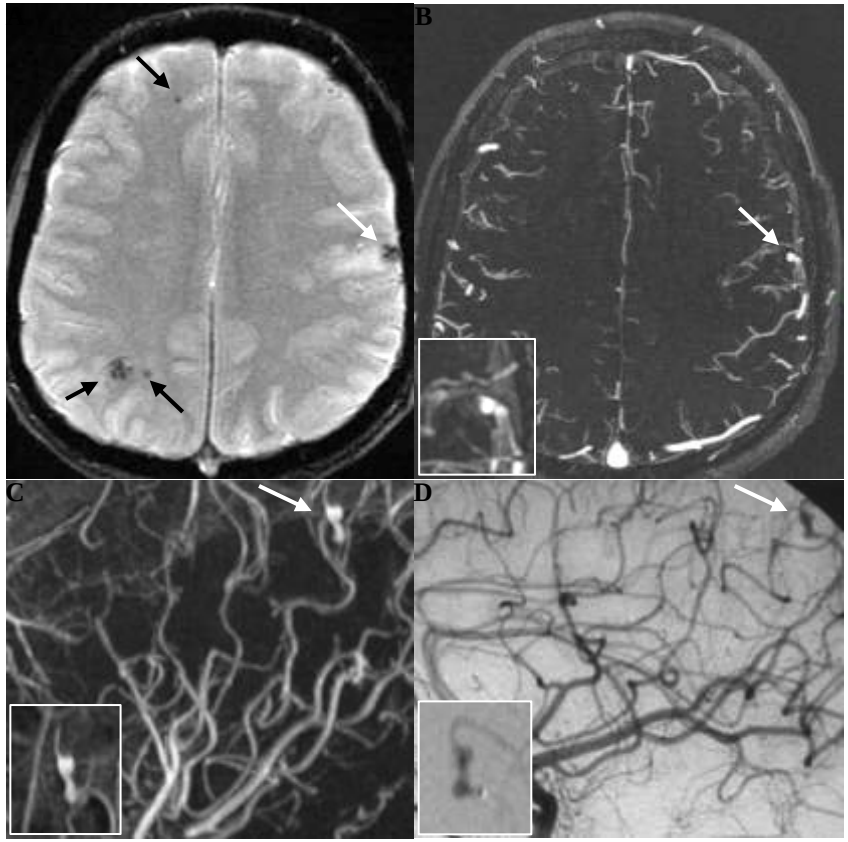


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IMAGE diagnosis impact

Diagnosis AFTER MRI	EI Diagnosis BEFORE MRI: Definite n=77	Possible n=50	Exclude n=3
Definite n=91	77	14 ↑	
Possible n=39		36	3 ↑
Exclude n=0			0

Diagnosis modification in 17 / 53 non definite IE(25%)

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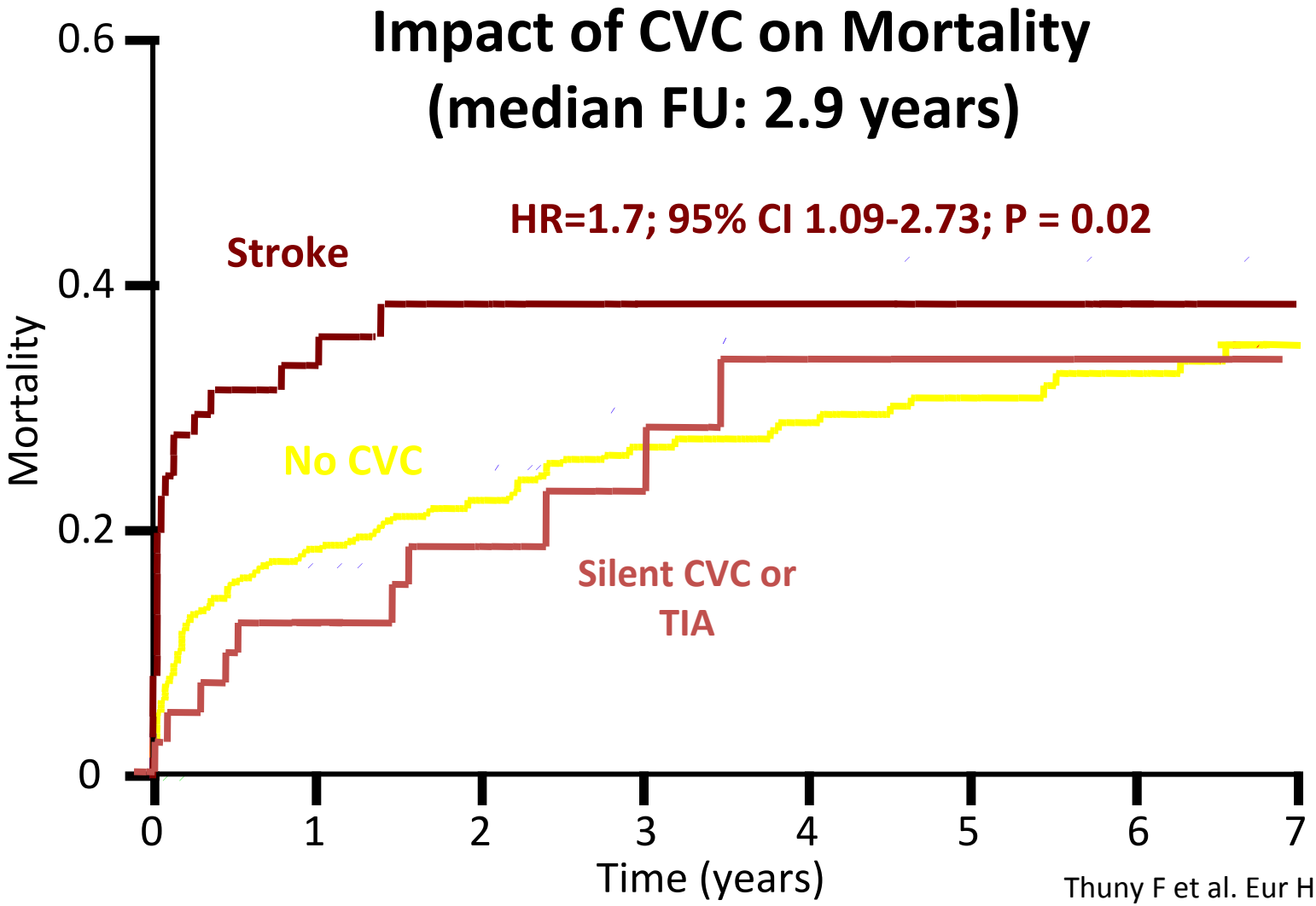

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Subclinical Brain Embolization in Left-Sided Infective Endocarditis

Results From the Evaluation by MRI of the Brains of Patients With Left-Sided Intracardiac Solid Masses (EMBOLISM) Pilot Study

Howard A. Cooper, MD; Elissa C. Thompson, MD; Robert Laureno, MD; Anthon Fuisz, MD; Alexander S. Mark, MD; Mark Lin, MD; Steven A. Goldstein, MD

Circulation 2009

- Prognosis 40 pts: 48% death at M3

		Ischemic event (n=32)		**NO** Isch E^{vnt}
		Symptoma^{tic} N=13	**Asympto N=19**	N=8
Death	M1	46%	32%	0%
	M3	62%	53%	12%
		56%*		**12%**

* p=0.046

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Impact of silent complications detection on therapeutic plans?

Could have an impact in several ways:

- Silent ischemic stroke: consider surgery in case of large vegetation?
- Abscess: use of AB with high CNS diffusion?
- Hemorrhagic events:
  - Modify anticoagulation level ?
  - Modify surgery timing ?
  - Cancel surgery ?

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IMAGE therapeutic impact

- In 29/130 pts (**22%**): experts modified IE treatment plans based on MRI results
  - Modification of anticoagulation level n= 6
  - Modification of antibiotics n= 5
  - Modification of surgery plan n=18
    - Surgery date postponed 6
    - Surgery date advanced 6
    - Type of valvular prosthesis 1
    - Reasons for surgery 1
    - Cancellation of surgery 2
    - Indication for surgery 2
  - Embolisation of aneurysm n = 4

Conclusions

- Systematic cerebral imaging: No recommendation
- Diagnosis impact
- Leads to
  - Find asymptomatic lesions
  - Modify therapeutic plan
  - Better evaluation of neurological risk
  - Increase cost, perfom unnecessary procedures?
- Pronostic impact unknown: RCT?