

Aucune imagerie extra-cardiaque systématique pour les endocardites !

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Argumentaire

- ✓ **Pas d'impact** sur la prise en charge des patients
- ✓ **La clinique** permet d'identifier les localisations extra-cardiaques **significatives**
- ✓ La médecine en 2016: '**ne faire que ce qui est utile**'
- ✓ **Ne croyez jamais Louis Bernard !**



Respective effects of early cerebral and abdominal magnetic resonance imaging on clinical decisions in infective endocarditis

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- ✓ **58** patients consécutifs avec suspicion d'EI certaine ou possible
- ✓ **IRM cérébrale & abdominale systématique avant J7**
- ✓ **Critère principal** = Qu'est-ce que ça change en pratique ?

Impact de l'imagerie abdominale

Table 2 Abdominal lesions observed on early systematic abdominal magnetic resonance imaging in 58 patients with infective endocarditis

	All patients, n (%)
	58
At least one lesion	20 (34)
More than one lesion	3 (5)
Ischaemic lesions	18 (31)
Spleen	15 (26)
Kidney	5 (9)
Liver	0
Haemorrhagic lesions	2 (3)
Spleen	2
Liver	0
Kidney	0
Abscess	3 (5)
Spleen	2
Liver	1
Kidney	1

Découverte de lésions abdominales chez 1 patient sur 3, mais...

...dans aucun cas cette découverte n'a eu d'impact sur la prise en charge (ATB, chirurgie, anticoagulant, etc.) !

Impact de l'imagerie cérébrale

Table 3 Cerebral lesions observed on early systematic cerebral magnetic resonance imaging in 58 patients with infective endocarditis

	All patients, n (%)	Patients with neurological symptoms, n (%)	Patients without neurological symptoms, n (%)
	58	4	54
At least one cerebral lesion	47 (80)	4 (100)	43 (80)
More than one cerebral lesion	37 (63)	3 (75)	34 (63)
Ischaemic cerebral lesions	25 (43)	3 (75)	22 (41)
Large systematized ischaemic lesions ^a	9 (16)	1 (25)	8 (15)
Small ischaemic lesions	21 (36)	3 (75)	18 (33)
Haemorrhagic cerebral lesions	35 (60)	2 (50)	33 (61)
Intra-parenchymal haemorrhagic lesions	3 (5)	2 (50)	1 (2)
Microbleeds	32 (55)	0 (0)	32 (59)
Subarachnoidal haemorrhage	5 (9)	1 (25)	4 (7)
Unruptured cerebral aneurysms	6 (10)	0 (0)	6 (10)
Cerebral abscess	4 (7)	1 (25)	3 (6)

Impact de l'imagerie cérébrale

Table 4 Infective endocarditis diagnostic impact of systematic magnetic resonance imaging, evaluated through the reclassification of Duke's modified criteria in 58 patients

	Infective endocarditis diagnosis before MRI ^a		
	Definite, n = 29	Possible, n = 27	Excluded, n = 2
Infective endocarditis diagnosis after MRI ^a			
Definite, n = 35 (41)	29 (29)	6 (12) ^b	
Possible, n = 23 (17)		21 (15)	2 (2) ^c
Excluded, n = 0 (0)			(0)

Changement de projet thérapeutique chez 11 patients (19%)

- Timing chirurgie (n=6)
- Anticoagulation (n=2)
- Choix/durée ATB (n=3)

Effect of Early Cerebral Magnetic Resonance Imaging on Clinical Decisions in Infective Endocarditis

A Prospective Study

Xavier Duval, MD, PhD; Bernard Jung, MD; Isabelle Klein, MD, PhD; Eric Brochet, MD; Gabriel Thabut, MD, PhD; Florence Arnoult, MD; Laurent Lepage, MD; Jean-Pierre Laissy, MD, PhD; Michel Wolff, MD; and Catherine Leport, MD, PhD, for the IMAGE (Resonance Magnetic Imaging at the Acute Phase of Endocarditis) Study Group*

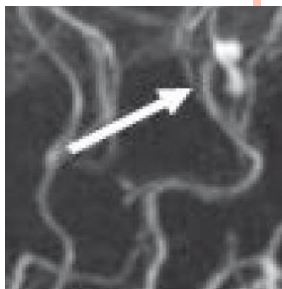
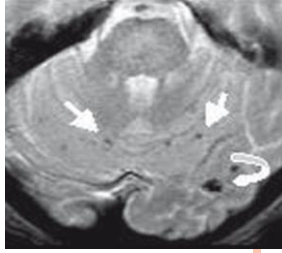
Etude prospective, monocentrique, 2005-2008

- 150 patients avec forte suspicion d'endocardite
- IRM cérébrale avant J7 – 2 lectures indépendantes (neuro-radio)
- Classification Duke et projet thérapeutique avant et après IRM (infectiologue/cardio)

Résultats

- Anomalies IRM : 16/16 patients avec signes neuro; 90/114 patients 'sans' (79%)
- Micro-bleed (61%), ischémie (52%), anévrisme (8%), abcès (6%)
- Changement projet thérapeutique (18%), essentiellement timing chirurgie

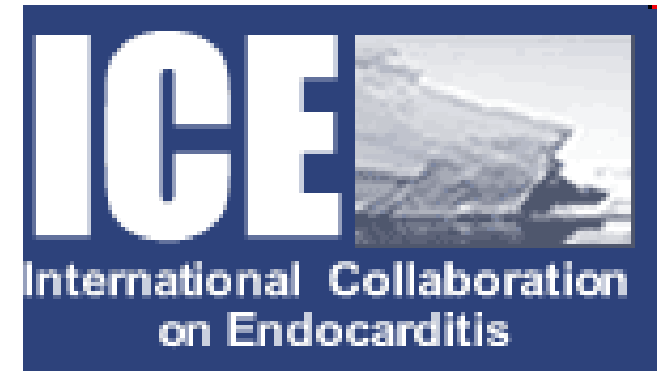
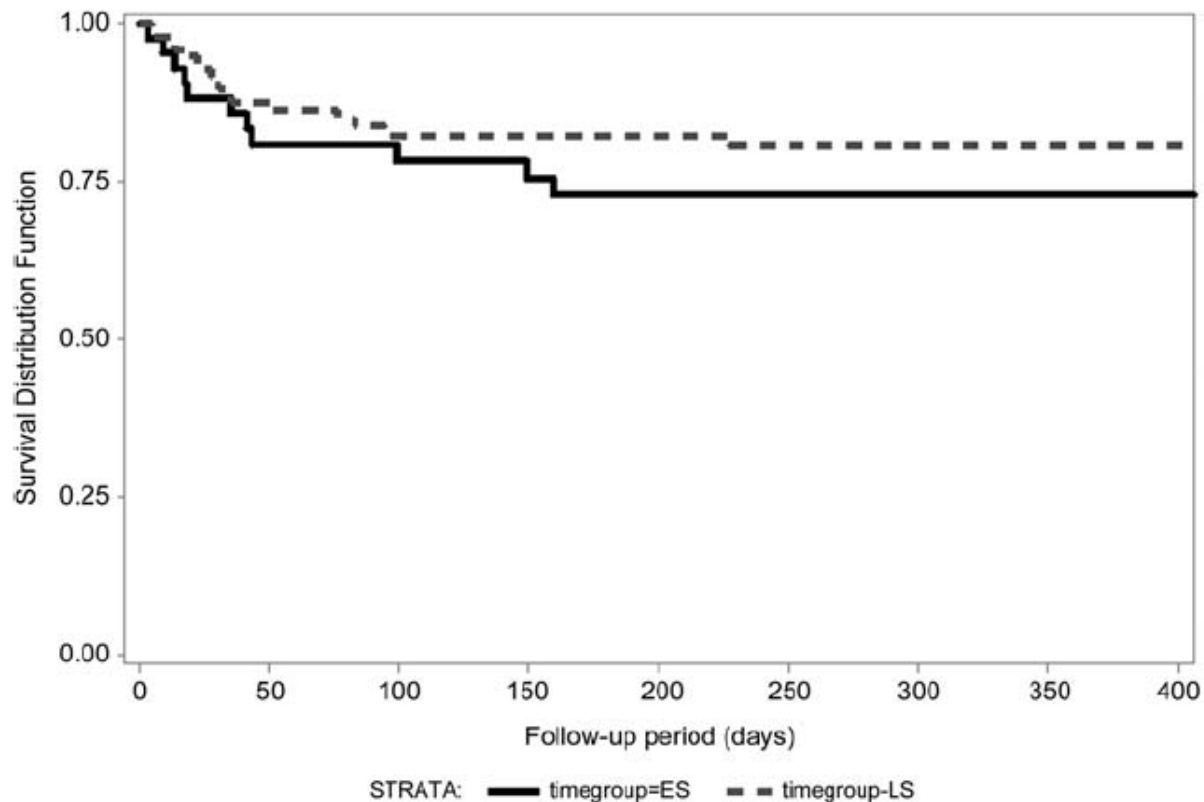
Diagnosis After MRI	Diagnosis Before MRI†		
	Definite (n = 77)	Possible (n = 50)	Excluded (n = 3)
Definite (n = 91 [101])	77	14 [24]	–
Possible (n = 39 [29])	–	36 [26]	3
Excluded (n = 0)	–	–	0



Influence of the Timing of Cardiac Surgery on the Outcome of Patients With Infective Endocarditis and Stroke

Bruno Barsic,¹ Stuart Dickerman,² Vladimir Krajinovic,¹ Paul Pappas,³ Javier Altclas,⁴ Giampiero Carosi,⁵ José H. Casabé,⁶ Vivian H. Chu,³ Francois Delahaye,⁷ Jameela Edathodu,⁸ Claudio Querido Fortes,⁹ Lars Olaison,¹⁰ Ana Pangercic,¹¹ Mukesh Patel,¹² Igor Rudez,¹³ Syahidah Syed Tamin,¹⁴ Josip Vincelj,¹³ Arnold S. Bayer,¹⁵ and Andrew Wang³; for the International Collaboration on Endocarditis–Prospective Cohort Study (ICE-PCS) Investigators^a

Figure 2. One-year survival for 198 patients undergoing surgery after ischemic stroke.





CLINICAL PRACTICE

Infective Endocarditis

Bruno Hoen, M.D., Ph.D., and Xavier Duval, M.D., Ph.D.



**‘The usefulness of
systematic brain
imaging is uncertain’**

AHA Scientific Statement

Infective Endocarditis in Adults: Diagnosis, Antimicrobial Therapy, and Management of Complications

A Scientific Statement for Healthcare Professionals From the American Heart Association

Endorsed by the Infectious Diseases Society of America

- ✓ **L'IRM cérébrale permet de détecter de nombreux emboles asymptomatiques...**
- ✓ **... mais son intérêt en routine n'est pas établi !**

AHA Scientific Statement

Infective Endocarditis in Adults: Diagnosis, Antimicrobial Therapy, and Management of Complications

A Scientific Statement for Healthcare Professionals From the American Heart Association

Endorsed by the Infectious Diseases Society of America

Recommendations

- 1. Cerebrospinal imaging should be performed to detect ICMA or CNS bleeding in all patients with IE or contiguous spread of infection who develop severe, localized headache, neurological deficits, or meningeal signs (*Class I; Level of Evidence B*).**
- 2. Cerebrovascular imaging may be considered in all patients with left-sided IE who have no CNS signs or symptoms (*Class IIb; Level of Evidence C*).**

AHA Scientific Statement

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Recommendations

- 1. Valve surgery may be considered in IE patients with stroke or subclinical cerebral emboli and residual vegetation without delay if intracranial hemorrhage has been excluded by imaging studies and neurological damage is not severe (ie, coma) (*Class IIb; Level of Evidence B*).**
- 2. In patients with major ischemic stroke or intracranial hemorrhage, it is reasonable to delay valve surgery for at least 4 weeks (*Class IIa; Level of Evidence B*).**

Neurological Complications of Infective Endocarditis

Risk Factors, Outcome, and Impact of Cardiac Surgery: A Multicenter Observational Study

Emilio García-Cabrera, MSc; Nuria Fernández-Hidalgo, MD; Benito Almirante, MD, PhD;

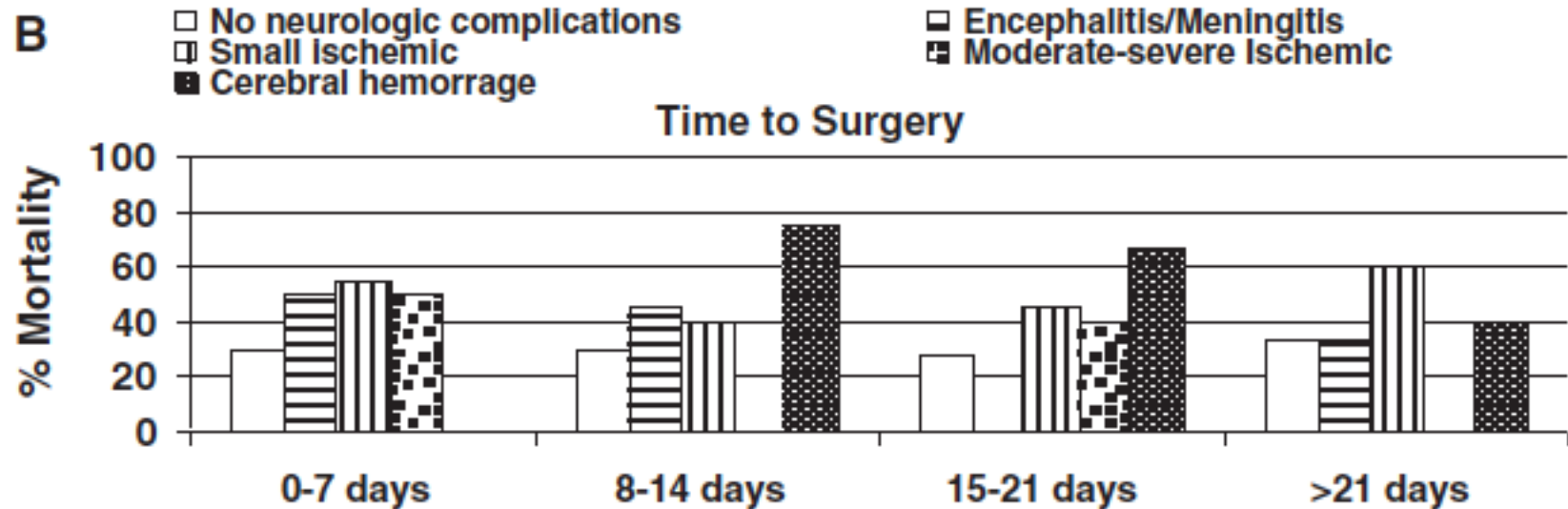
Radka Ivanova-Georgieva, MD, PhD; Mariam Nouredine, MD; Antonio Plata, MD;

Jose M. Lomas, MD; Juan Gálvez-Acebal, MD, PhD; Carmen Hidalgo-Tenorio, MD, PhD;

Josefa Ruíz-Morales, MD; Francisco J. Martínez-Marcos, MD, PhD; Jose M. Reguera, MD;

Javier de la Torre-Lima, MD, PhD; Arístides de Alarcón González, MD, PhD;

on behalf of the Group for the Study of Cardiovascular Infections of the Andalusian Society of Infectious Diseases (SAEI) and the Spanish Network for Research in Infectious Diseases (REIPI)



AHA Scientific Statement

Infective Endocarditis in Adults: Diagnosis, Antimicrobial Therapy, and Management of Complications

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✓ **Autre imagerie pour recherche de foyers infectieux extra-cardiaques ?**

- si douleurs abdominales
- ou fièvre/bactériémie persistante(s)

‘a directed workup is advocated on the basis of localizing signs and symptoms’

Table 14 Definitions of the terms used in the European Society of Cardiology 2015 modified criteria for the diagnosis of infective endocarditis

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Major criteria

1. Blood cultures positive for IE

- a. Typical microorganisms consistent with IE from 2 separate blood cultures:
 - *Viridans streptococci*, *Streptococcus gallolyticus* (*Streptococcus bovis*), *HACEK group*, *Staphylococcus aureus*; or
 - Community-acquired enterococci, in the absence of a primary focus; or
- b. Microorganisms consistent with IE from persistently positive blood cultures:
 - ≥ 2 positive blood cultures of blood samples drawn >12 h apart; or
 - All of 3 or a majority of ≥ 4 separate cultures of blood (with first and last samples drawn ≥ 1 h apart); or
- c. Single positive blood culture for *Coxiella burnetii* or phase I IgG antibody titre $>1:800$

2. Imaging positive for IE

- a. Echocardiogram positive for IE:
 - Vegetation;
 - Abscess, pseudoaneurysm, intracardiac fistula;
 - Valvular perforation or aneurysm;
 - New partial dehiscence of prosthetic valve.
- b. Abnormal activity around the site of prosthetic valve implantation detected by ^{18}F -FDG PET/CT (only if the prosthesis was implanted for >3 months) or radiolabelled leukocytes SPECT/CT.
- c. Definite paravalvular lesions by cardiac CT.

Minor criteria

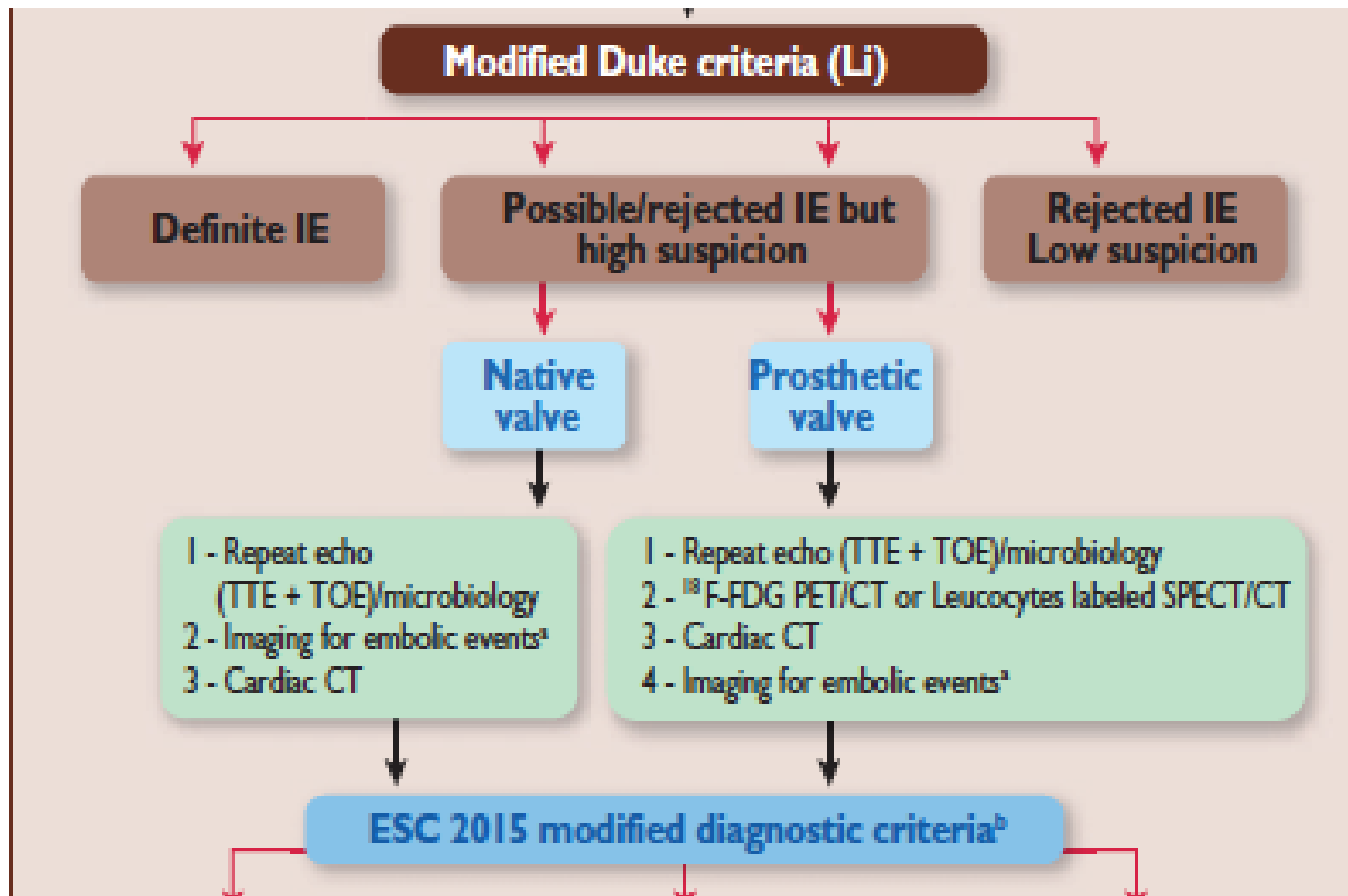
1. Predisposition such as predisposing heart condition, or injection drug use.
2. Fever defined as temperature $>38^\circ\text{C}$.
3. Vascular phenomena (including those detected by imaging only): major arterial emboli, septic pulmonary infarcts, infectious (mycotic) aneurysm, intracranial haemorrhage, conjunctival haemorrhages, and Janeway's lesions.
4. Immunological phenomena: glomerulonephritis, Osler's nodes, Roth's spots, and rheumatoid factor.
5. Microbiological evidence: positive blood culture but does not meet a major criterion as noted above or serological evidence of active infection with organism consistent with IE.

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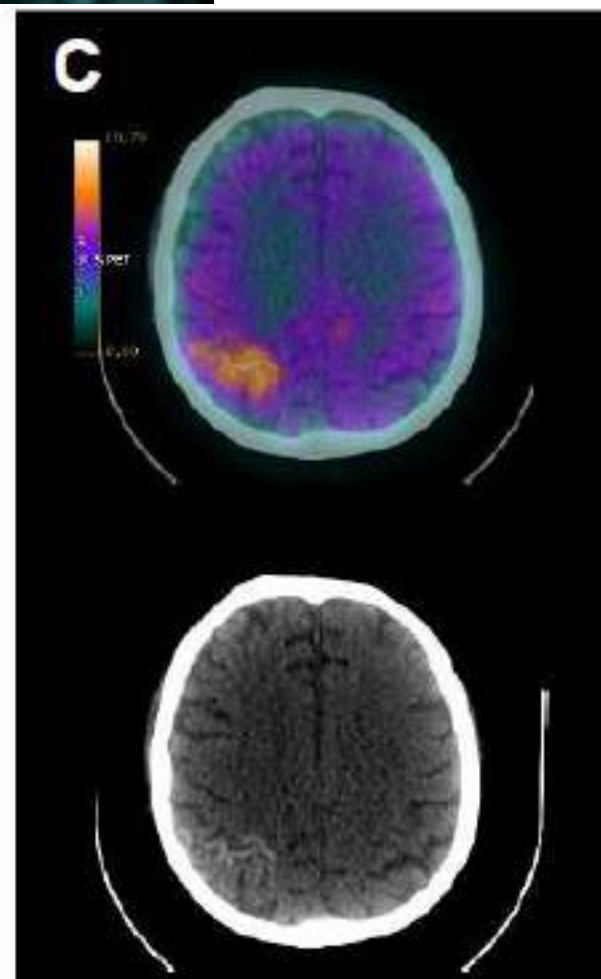
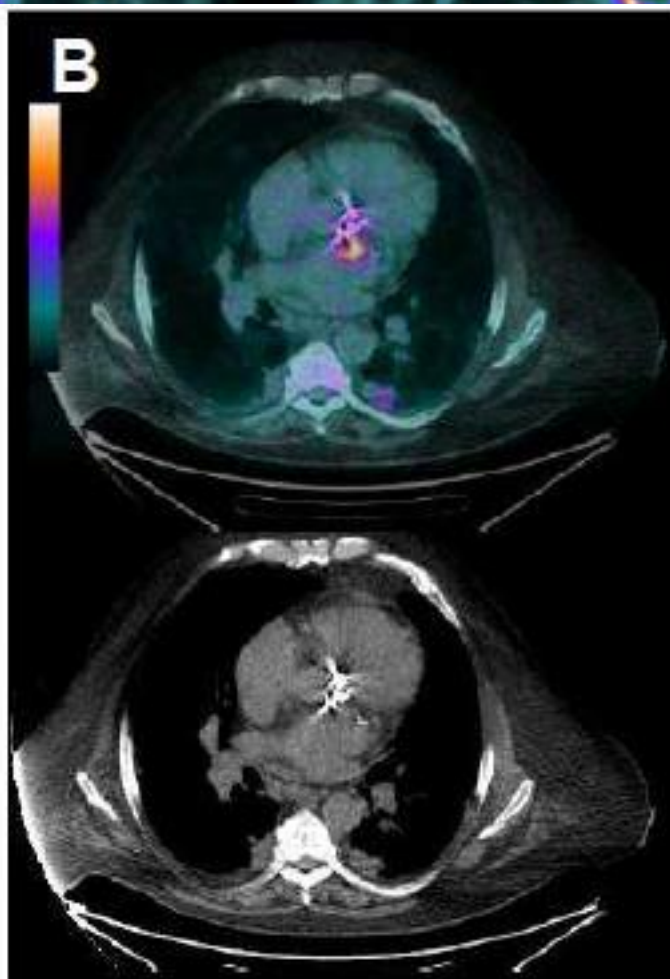
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^aMay include cerebral MRI, whole body CT, and/or PET/CT.

Table 23 Management of neurological complications of infective endocarditis

Recommendations	Class ^a	Level ^b	Ref. ^c
After a silent embolism or transient ischaemic attack, cardiac surgery, if indicated, is recommended without delay	I	B	105, 263
Neurosurgery or endovascular therapy is recommended for very large, enlarging or ruptured intracranial infectious aneurysms	I	C	
Following intracranial haemorrhage, surgery should generally be postponed for ≥ 1 month	IIa	B	264–266
After a stroke, surgery indicated for HF, uncontrolled infection, abscess, or persistent high embolic risk should be considered without any delay as long as coma is absent and the presence of cerebral haemorrhage has been excluded by cranial CT or MRI	IIa	B	9,263
Intracranial infectious aneurysms should be looked for in patients with IE and neurological symptoms. CT or MR			



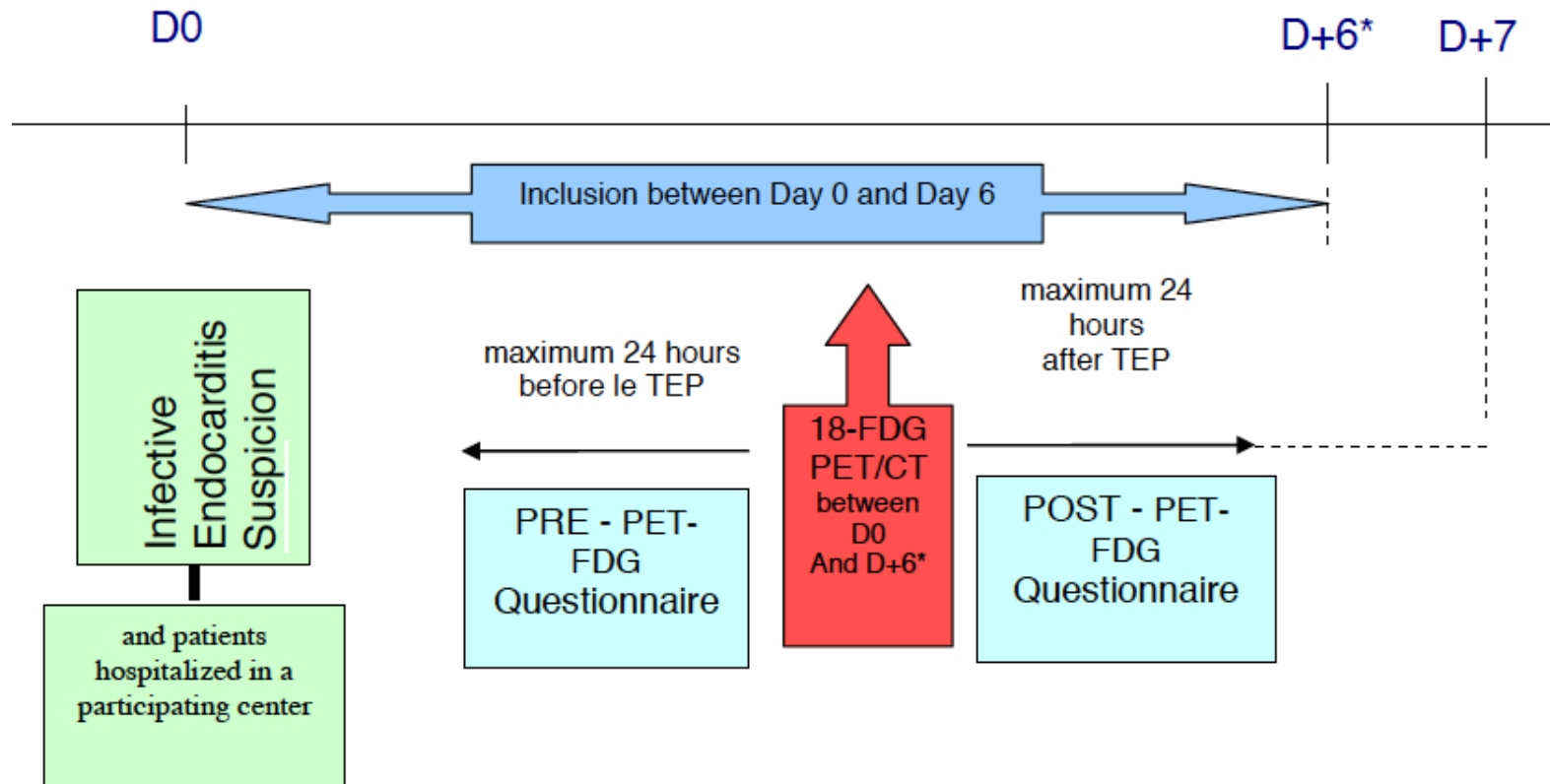
**Imagerie par TEP/CT au 18-FDG à la phase aiguë de
l'endocardite infectieuse (TEPvENDO) :
Impact diagnostique et thérapeutique**

**Effect of 18-FDG PET/CT imaging on clinical decision making
during the acute phase of infective endocarditis :
a multicenter prospective impact study.**

**Etude systématique de ce qu'apporte un TEP-scan à la
phase aiguë d'une suspicion d'EI**

- ✓ **diagnostique (EI possible => certaine)**
- ✓ **complications (foyers infectieux, embolies)**
- ✓ **porte d'entrée**

Inclusions bouclées ce mois-ci (n=150)



Conclusions

✓ **Pas d'imagerie extra-cardiaque systématique pour les EI**

Mais...

✓ **Avoir un seuil 'bas' pour l'imagerie en fonction des évènements**

douleurs abdos

céphalées

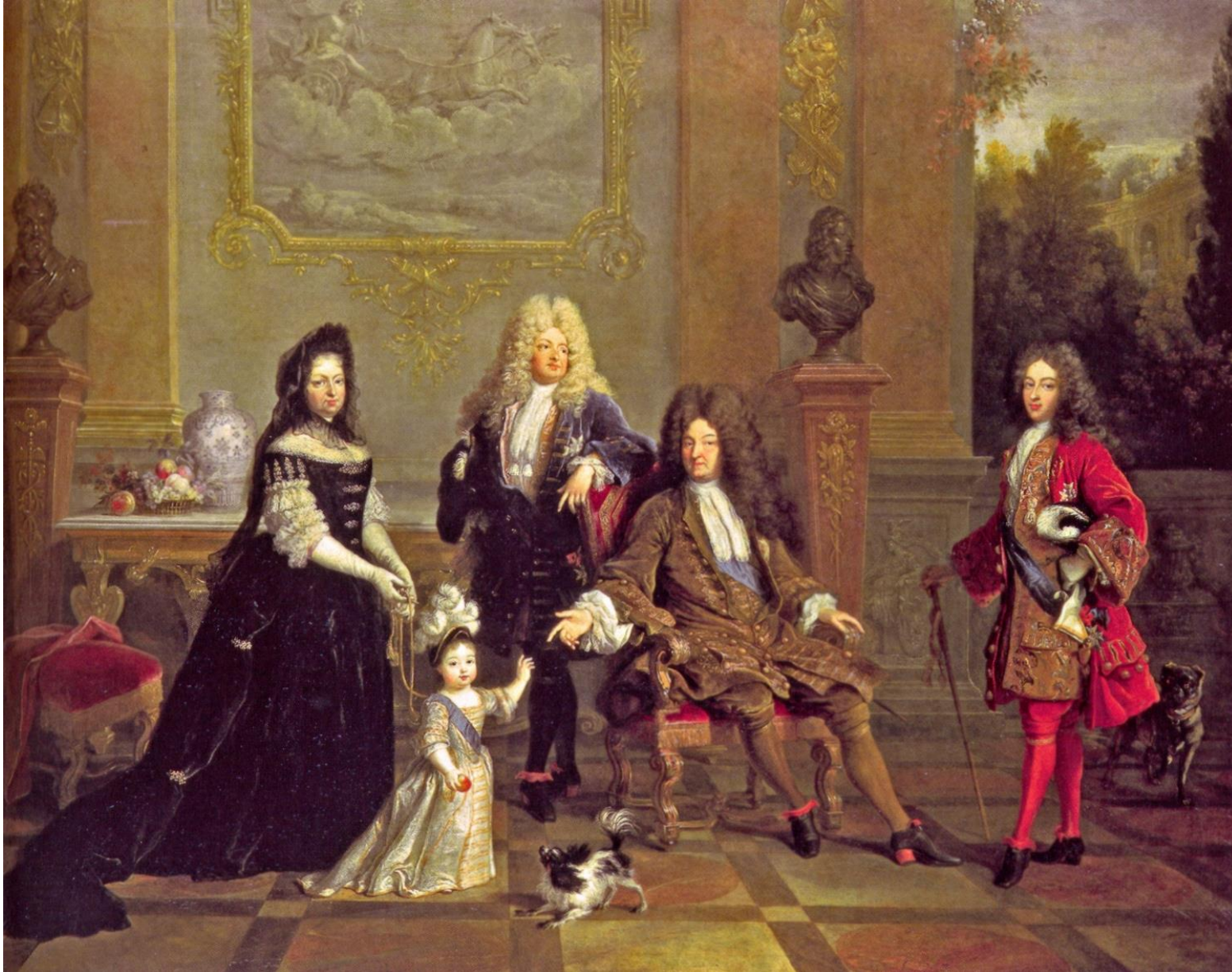
fièvre et/ou bactériémie persistante, etc.

✓ **Imagerie cérébrale systématique avant chirurgie cardiaque**

Impact sur le timing de la chirurgie 'quand on peut'

Traitement pré-opératoire de lésions à risque hémorragique

Merci de votre attention !





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