



L'endocardite
dans tous
ses états

ACTUALITES BIBLIOGRAPHIQUES

Partie 1



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Actualité EI et TAVI

TAVR-associated prosthetic valve infective endocarditis

- 2572 patients
- 14 centres 2008-2013
- 29 EI (incidence 1.13%)
- 80 % des cas dans les 12 premiers mois
- 13 % reprise chirurgicale
- Mortalité 62 % (18/29)
- Microbiologie : staph + entérocoques = 50%

Actualité EI et TAVI

Infective Endocarditis After Transcatheter Aortic Valve Implantation Results From a Large Multicenter Registry

- 7944 patients
- 21 centres
- 2007-2014
- Incidence : 53 cas soit 0.67%
0.5 % à 1 an

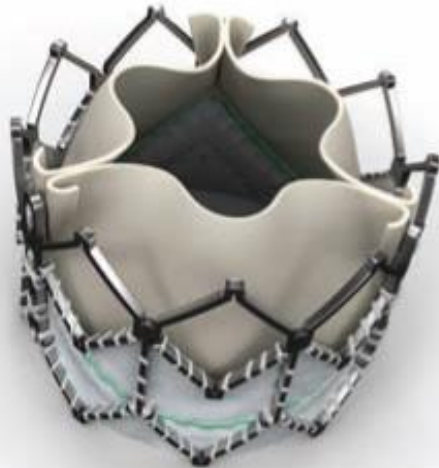
Actualité EI et TAVI

Infective Endocarditis After Transcatheter Aortic Valve Implantation Results From a Large Multicenter Registry

Table 1. Main Baseline and Periprocedural Characteristics According to the Occurrence of IE

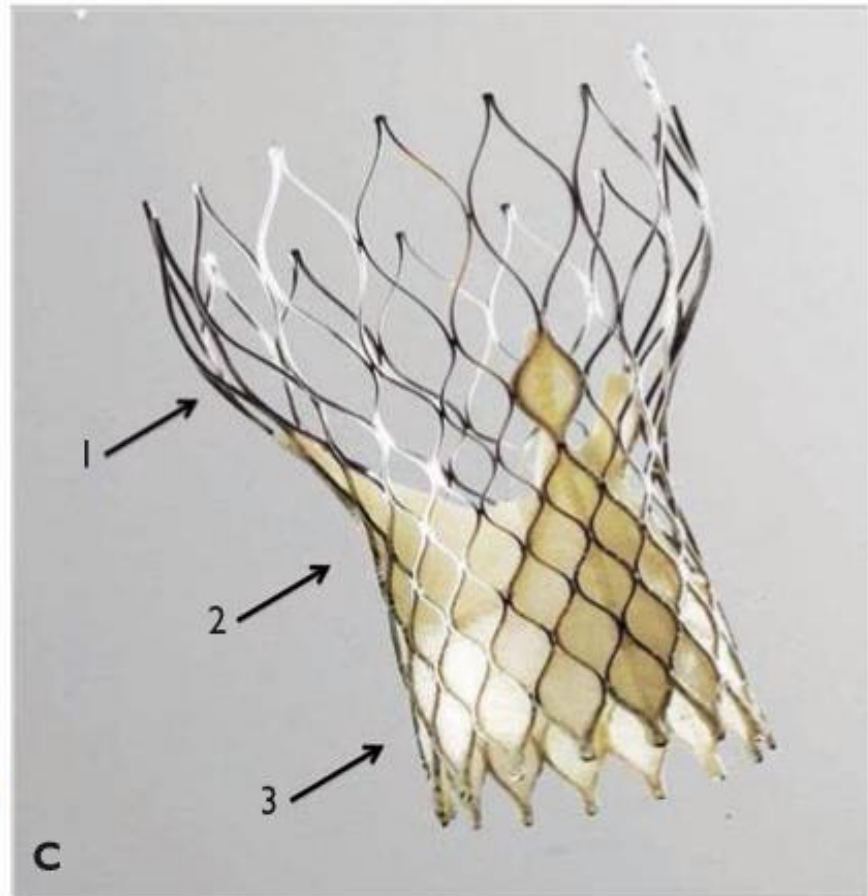
Variables	Global TAVI Population (n=7891)	TAVI-IE Population (n=53)	P Value
Baseline characteristics			
Age, y*	81±8	79±8	0.033
Female sex, n (%)	3797/7170 (53.0)	23 (43.4)	0.165
Diabetes mellitus, n (%)	1279/4086 (31.3)	19 (35.8)	0.474
COPD, n (%)	1079/4086 (26.4)	18 (34.0)	0.212
eGFR <60 mL/min, n (%)	1908/4086 (46.7)	22 (41.5)	0.448
LogEuroSCORE, %*	20.24±12.99	24.85±13.82	0.010
Periprocedural characteristics			
Implantation site, n (%)			
Catheterization laboratory	4450/7355 (60.5)	32 (60.4)	0.986
Operating/hybrid room	2905/7355 (39.5)	21 (39.6)	
Type of antibiotic prophylaxis, n (%)			
Penicillins	1748 (22.2)	9 (17.0)	0.108
Cephalosporins	4748 (61.8)	30 (56.6)	
Vancomycin	1265 (16.0)	14 (26.4)	

Table 1. Main Baseline and Periprocedural Characteristics According to the Occurrence of IE
Valve aortique Edwards SAPIEN



A

Valve aortique CoreValve



C

Système transfémoral NovaFlex



B

Table 2. Main Clinical Characteristics, Management, and Outcomes of IE After TAVI (n=53)

Variables

Time from TAVI, mo	6 (1–14)
Initial symptoms, n (%)	
Fever	38 (71.7)
Heart failure	31 (58.5)
Neurological	4 (7.5)
Cutaneous	2 (3.8)
Hyporexia, weight loss	11 (20.8)

Exposure to sources of bacteremia before IE, n (%)

Unknown	27 (50.9)
Odontological	3 (5.7)
Urologic	4 (7.5)
Skin infection	5 (9.4)
Pacemaker implantation	1 (1.9)
Health care related	21 (39.6)

Antibiotic prophylaxis, n (%)*

31 (58.5)

Microorganisms, n (%)

<i>Coagulase-negative Staphylococci</i>	13 (24.5)
<i>Staphylococcus aureus</i>	11 (20.8)
<i>Enterococci</i>	11 (20.8)
<i>Streptococcus viridans</i>	3 (5.7)
Unknown (negative cultures)	2 (3.8)
Other	13 (24.5)

Echocardiographic findings, n (%)

Vegetations	41 (77.4)
Aorto-atrial fistulas	2 (3.8)
Aortic pseudoaneurysm	2 (3.8)
Aortic abscess	8 (15.1)
New aortic regurgitation (transvalvular)	8 (15.1)
New mitral regurgitation	10 (18.9)

IE complications, n (%)

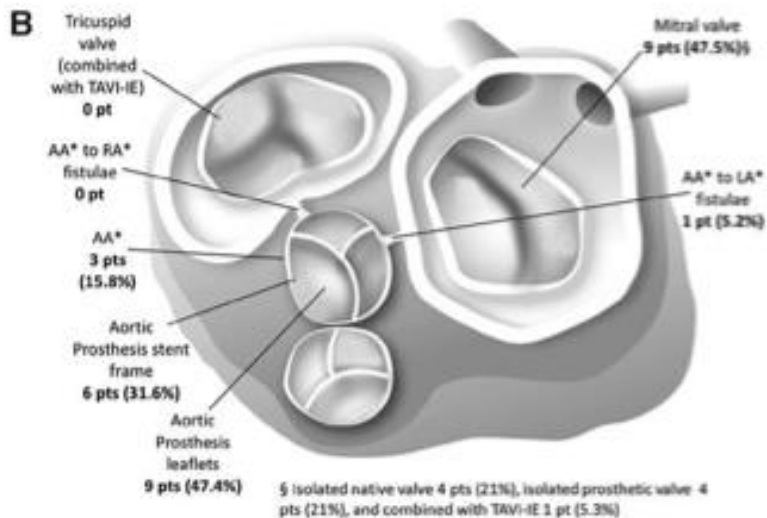
Heart failure	36 (67.9)
Acute kidney injury	29 (54.7)
Septic shock	11 (20.8)
Stroke	4 (7.5)
Systemic embolism	5 (9.4)
Persistent infection	15 (28.3)

Management and outcomes, n (%)

Valve intervention	6 (11.3)
Surgical valve explantation	4 (7.5)
Valve-in-valve procedure	2 (3.8)
In-hospital death	25 (47.2)
Death at follow-up	13 (24.5)
Cumulative death	38 (71.7)

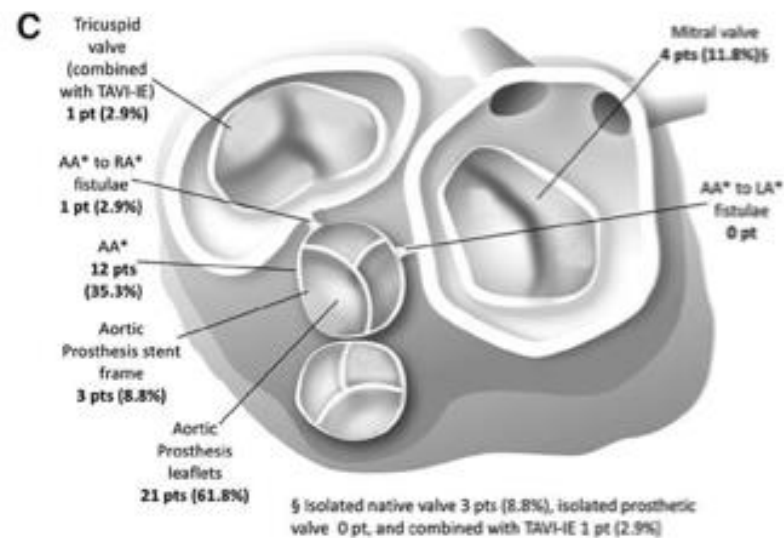
Values are expressed as median (interquartile range) when appropriate. IE indicates infective endocarditis; and TAVI, transcatheter aortic valve implantation.

*Antibiotic prophylaxis before exposition to door of entry.



edwards

corevalve



Actualité EI et imagerie

PLACE DU TEP-SCAN DANS LES EI PROTHESES/DCEI?

Table 11 Modified Duke criteria for the diagnosis of infective endocarditis (adapted from Li et al.⁹⁴)

MAJOR CRITERIA	
Blood cultures positive for IE:	
<ul style="list-style-type: none">• Typical microorganisms consistent with IE from two separate blood cultures: Viridans streptococci, <i>Streptococcus bovis</i>, HACEK group, <i>Staphylococcus aureus</i>; or Community-acquired enterococci, in the absence of a primary focus;	
or	
<ul style="list-style-type: none">• 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)	
or	
<ul style="list-style-type: none">• Single positive blood culture for <i>Coxiella burnetii</i> or phase I IgG antibody titer > 1 : 800	
Evidence of endocardial involvement	
<ul style="list-style-type: none">• Echocardiography positive for IE Vegetation - Abscess - New partial dehiscence of prosthetic valve• New valvular regurgitation	
MINOR CRITERIA	
<ul style="list-style-type: none">• 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	
Diagnosis of IE is definite in the presence of 2 major criteria, or 1 major and 3 minor criteria, or 5 minor criteria	Diagnosis of IE is possible in the presence of 1 major and 1 minor criteria, or 3 minor criteria

Actualité EI et imagerie : prothèses valvulaires et DCEI

Journal of the American College of Cardiology
© 2013 by the American College of Cardiology Foundation
Published by Elsevier Inc.

Vol. 61, No. 23, 2013
ISSN 0735-1097/\$36.00
<http://dx.doi.org/10.1016/j.jacc.2013.01.092>

Cardiac Imaging in Endocarditis

Positron Emission Tomography/Computed Tomography for Diagnosis of Prosthetic Valve Endocarditis

Increased Valvular ^{18}F -Fluorodeoxyglucose Uptake as a
Novel Major Criterion

	Final Diagnosis		
	Definite PVE	Possible PVE	Rejected PVE
Duke			
Definite PVE	21 (70)	0 (0)	0 (0)
Possible PVE	8 (27)	22 (100)	10 (50)
Rejected PVE	1 (3)	0 (0)	10 (50)
Duke-PET/CT			
Definite PVE	29 (97)	10 (45)	2 (10)
Possible PVE	1 (3)	12 (55)	10 (50)
Rejected PVE	0	0	8 (40)

Values are n (% of each final diagnosis).
Abbreviations as in Tables 1 and 2.

Saby et al (JACC , juin 2013)

Actualité EI et imagerie : prothèses valvulaires et DCEI

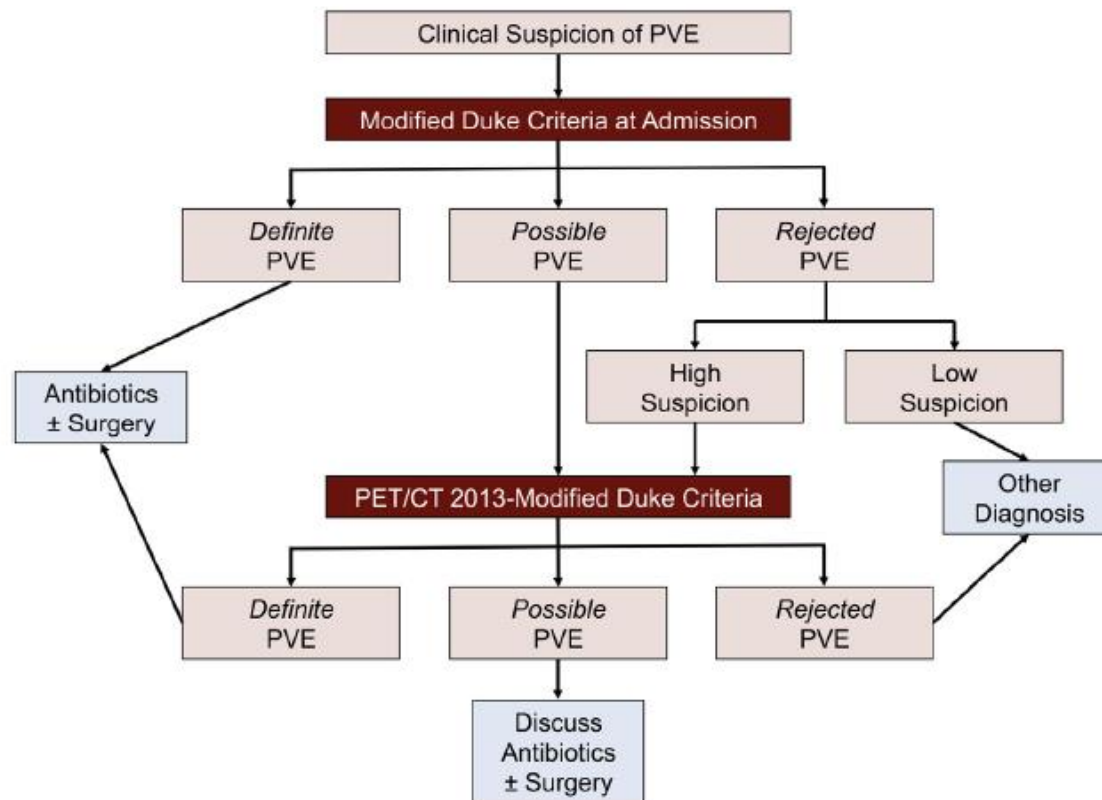


Figure 5 Proposed Algorithm for Evaluating Patients With Suspected PVE Using PET/CT

Actualité EI et imagerie : prothèses valvulaires et DCEI

- **18FDG-positron emission tomography (PET) has a role to play in the diagnosis and therapy of infective endocarditis and cardiac device infection.** Millar, Int J Cardiol 2013 ; 167 : 1724-36
- **Role of 18F-FDG PET/CT in the diagnosis of infective endocarditis in patients with an implanted cardiac device: a prospective study.** Graziosi, Eur J Nucl Med Mol Imaging 2014 ; 41 : 1617-23
- **Cardiovascular implantable electronic device infection: delayed vs standard FDG PET-CT imaging.** Leccisotti, J Nucl Cardiol 2014 ; 21 : 622-32
- **Clinical impact of 18F-FDG-PET/CT in the extra cardiac work-up of patients with infective endocarditis.** Asmar, Eur Heart J Cardiovasc Imaging 2014 ; 15(9) : 1013-9
- **Respective Performance of 18F-FDG PET and Radiolabeled Leukocyte Scintigraphy for the Diagnosis of Prosthetic Valve Endocarditis.** Rouzet, J Nucl Med 2014 ; 55 : 1980-5
- **Contribution of 18fluoro-deoxyglucose PET/CT for the diagnosis of infectious diseases.** Revest, Med Mal Infect 2014 ; 44 : 251-60

Actualité EI et imagerie : DCEI

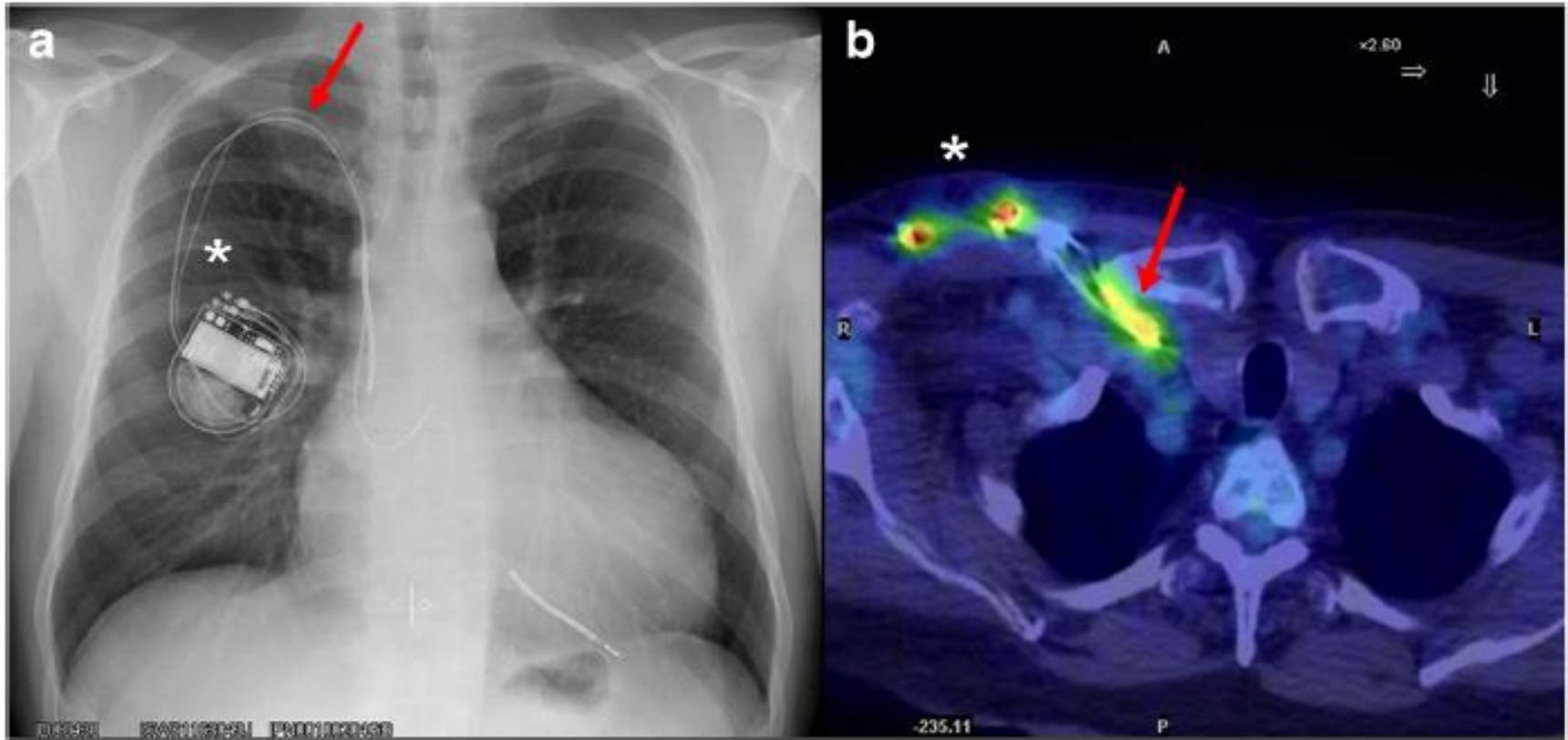
Role of ^{18}F -FDG PET/CT in the diagnosis of infective endocarditis in patients with an implanted cardiac device: a prospective study

■ Etude prospective, 27 patients

Table 1 Main characteristics of the study population at presentation

Characteristic	Value	Echocardiography (transthoracic or transoesophageal), n (%)
No. of patients	27	Negative 15 (56)
Age (years), mean±SD	69±13	Sessile mass 1 (4)
Male gender, n (%)	24 (89)	Oscillating mass 8 (30)
Device, n (%)		Lead thickening 3 (11)
Single chamber ICD	6 (22)	Tricuspid valve involvement ^a 2 (7)
Single lead PM	2 (7)	Aortic or mitral valve involvement ^a 1 (4)
Dual chamber PM	10 (37)	Laboratory (mean±SD)
Biventricular ICD	8 (30)	Haemoglobin (g/dl) 12±3
Biventricular ICD with left ventricular endocardial lead	1 (4)	PCR (mg/dl) 2±3
Clinical presentation, n (%)		Ferritin (ng/ml) 686±610
Pocket infection	4 (15)	Initial Duke score, n (%)
Signs of local inflammation (pain, erythema, swelling)	3 (11)	Definite IE 5 (19)
Decubitus	5 (19)	Possible IE 10 (37)
Fever	14 (52)	IE rejected 12 (44)
No symptoms	1 (4)	

Actualité EI et imagerie : DCEI



- Intérêt ++ dans les diagnostics « possibles »
- Localisation : portion extra cardiaque des sondes
- Différencier thrombus/végétations
- Limites : Faux négatifs (début ABTQ) / petite série

Guidelines for the diagnosis, prevention and management of implantable cardiac electronic device infection

6.4 What is the role of FDG PET/CT scanning?

Summary:

- **Recommendation 6.4: Routine use of FDG PET/CT scanning outside research studies is not currently recommended. [C]**

In case reports⁸⁶⁻⁹⁶ and pilot series⁹⁷⁻⁹⁹ fluorodeoxyglucose positron emission tomography combined with CT (FDG PET/CT) has been used to assist the diagnosis of ICED infection. In many of these cases FDG PET/CT confirmed generator pocket infection when there were already clinical features to suggest infection, raising doubts about the added value of the test. Early reports indicate that FDG PET/CT is not a sensitive tool for the diagnosis of ICED-LI/IE but may be useful when there is uncertainty about generator pocket infection, which would be a clear clinical benefit. Optimal timing, acquisition and processing of images are currently unclear.¹⁰⁰ At the present time there is insufficient evidence of what FDG PET/CT adds to a clinical diagnosis, and this investigation cannot be recommended as a routine clinical test but may be useful in selected cases where there is diagnostic uncertainty.





