Imaging Valvular Endocarditis

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European Heart Journal
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ESC GUIDELINES

Guidelines on the prevention, diagnosis, and treatment of infective endocarditis (new version 2009)

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RECOMMENDATIONS

Recommendations for the practice of echocardiography in infective endocarditis

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Imaging in infective endocarditis

1. Diagnosis

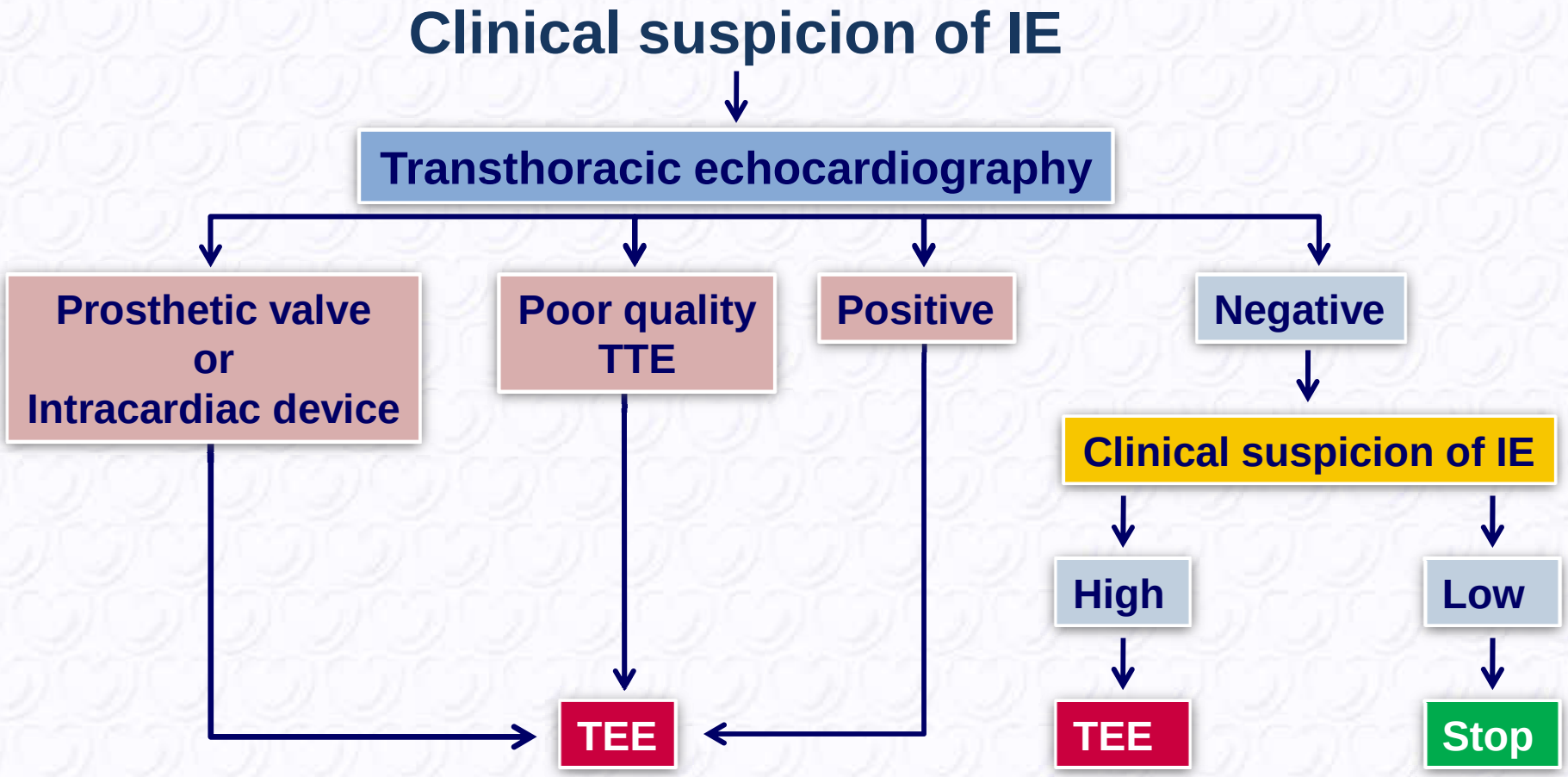
2. Management

Imaging in infective endocarditis

1. ***Diagnosis***

2. **Management**

Indications for echocardiography

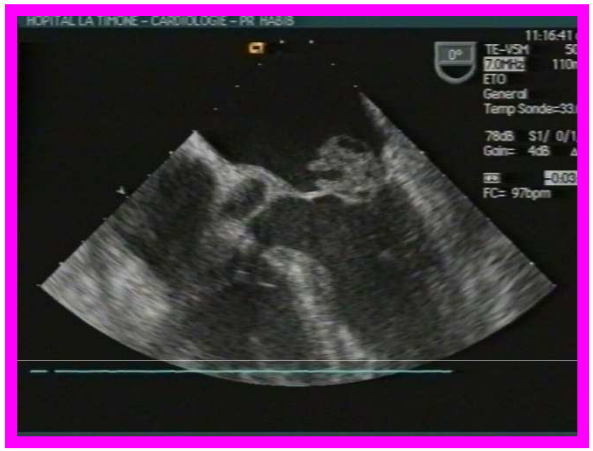


If initial TEE is negative but persistent suspicion of IE: repeat TEE within 7-10 days

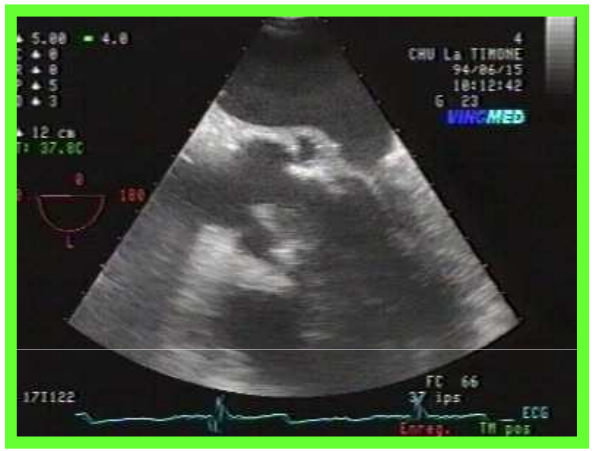
European Heart Journal (2009) 30:2369–2413

The Duke echographic criteria

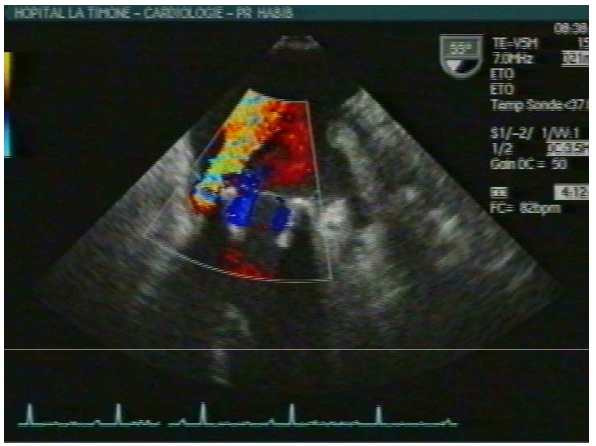
Durack DT Am J Med 1994 ; 96 : 200-9



vegetation



abscess



new dehiscence of prosthetic valve

Echo is not 100% sensitive

1. very small (< 2 mm) vegetation
2. non vegetant endocarditis
3. prosthetic and pacemaker endocarditis
4. mitral valve prolapse with thickened valves
5. vegetation not yet present or already embolized

Role of echocardiography in IE (1)

A. Diagnosis

Recommendations	Class	Level
1. TTE is recommended as the first-line imaging in suspected IE.	I	B
2. TEE is recommended in patients with high clinical suspicion of IE and normal TTE.	I	B
3. Repeat TTE/TEE within 7-10 days in case of negative initial examination and if clinical suspicion of IE persists.	I	B
4. TEE should be considered in most of adult patients with suspected IE, even in case of positive TTE.	IIa	C
5. TEE is not indicated in patients with a good quality negative TTE and low suspicion of IE.	III	C

European Heart Journal (2009) 30:2369–2413

PET scan in endocarditis

1. advantages

- non invasive
- early detection of infection/ abscess
- in prosthetic valves / pacemakers
- detection of secondary localizations

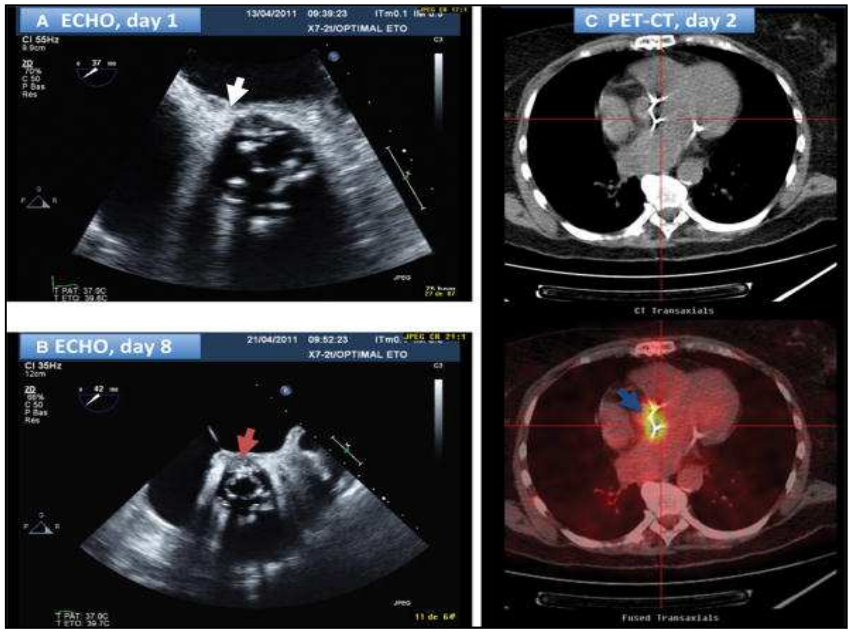
2. limitations

- few data
- false positive in the year after PV replacement
- availability

Images in Cardiovascular Medicine

Early Diagnosis of Abscess in Aortic Bioprosthetic Valve by 18F-Fluorodeoxyglucose Positron Emission Tomography-Computed Tomography

Ludivine Saby, MD; Yvan Le Dolley, MD; Olivia Laas, MD; Laetitia Tessonnier, MD; Serge Cammilleri, MD; Jean-Paul Casalta, MD; Didier Raoult, MD, PhD; Gilbert Habib, MD; Franck Thuny, MD, PhD



Results of echocardiographic studies and 18F-FDG PET-CT

The first transesophageal echocardiography (A) showed a small thickening around the aortic bioprosthetic annulus (white arrow).

The second transesophageal echocardiography (B), performed 8 days after, showed a periprosthetic abscess (red arrow).

The 18F-FDG PET-CT performed the day after the first echocardiography showed a hyperfixation around the aortic prosthesis (C, blue arrow).

Circulation. 126(14):e217-e220, October 2, 2012.
DOI: 10.1161/CIRCULATIONAHA.112.102301

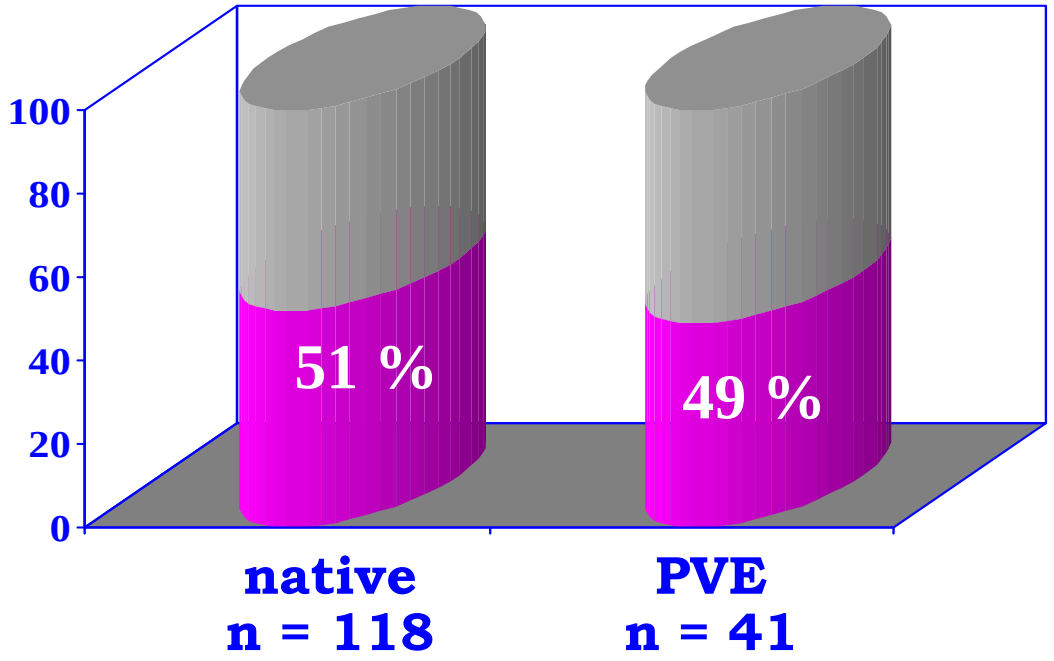
Imaging in infective endocarditis

1. Diagnosis

2. *Management*

Surgery in IE : Euro Heart Survey

Tornos P – Heart 2005 ; 91 : 571-5



Surgery performed

Medical therapy only

Reasons for surgery

- *CHF: 65%*
- *persistent sepsis: 45%*
- *embolism: 20%*

Guidelines ESC 2009 / EAE 2010

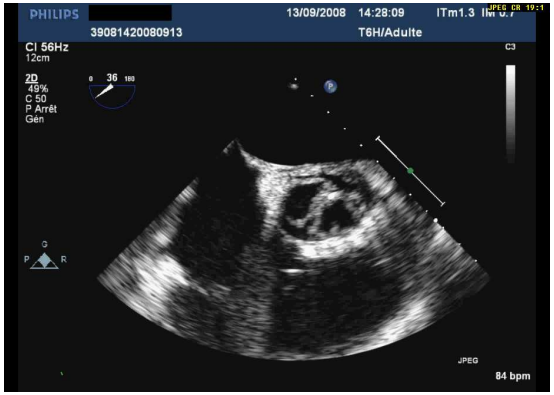
Recommendations: Indications for surgery	Timing*	Class[a]	Level[b]
A - HEART FAILURE			
Aortic or mitral IE with severe acute regurgitation or valve obstruction causing refractory pulmonary oedema or cardiogenic shock	Emergency	I	B
Aortic or mitral IE with fistula into a cardiac chamber or pericardium causing refractory pulmonary oedema or shock	Emergency	I	B
Aortic or mitral IE with severe acute regurgitation or valve obstruction and persisting heart failure or echocardiographic signs of poor haemodynamic tolerance (early mitral closure or pulmonary hypertension)	Urgent	I	B
Aortic or mitral IE with severe regurgitation and no HF	Elective	IIa	B
B - UNCONTROLLED INFECTION			
Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation)	Urgent	I	B
Persisting fever and positive blood cultures > 7-10 days	Urgent	I	B
Infection caused by fungi or multiresistant organisms	Urgent/elective	I	B
C - PREVENTION OF EMBOLISM			
Aortic or mitral IE with large vegetations (> 10 mm) following one or more embolic episodes despite appropriate antibiotic therapy	Urgent	I	B
Aortic or mitral IE with large vegetations (> 10 mm) and other predictors of complicated course (heart failure, persistent infection, abscess)	Urgent	I	C
Isolated very large vegetations (> 15 mm)[#]	Urgent	IIb	C

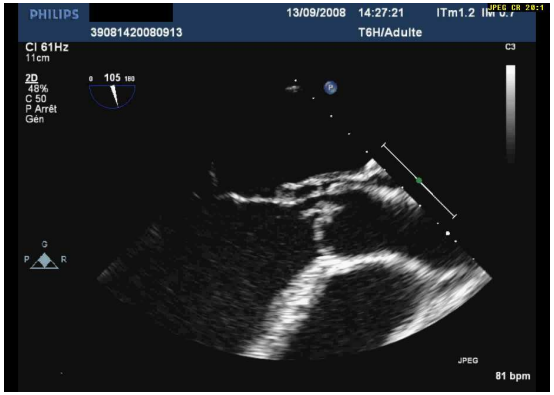
Indication 1: heart failure

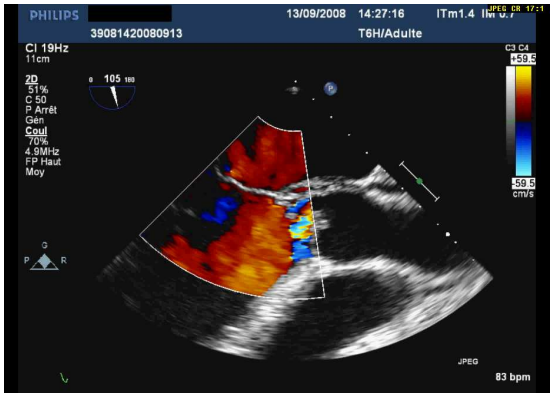
Recommendations: Indications for surgery	Timing*	Class[a]	Level[b]
A - HEART FAILURE			
Aortic or mitral IE with severe acute regurgitation or valve obstruction causing refractory pulmonary oedema or cardiogenic shock	Emergency	I	B
Aortic or mitral IE with fistula into a cardiac chamber or pericardium causing refractory pulmonary oedema or shock	Emergency	I	B
Aortic or mitral IE with severe acute regurgitation or valve obstruction and persisting heart failure or echocardiographic signs of poor haemodynamic tolerance (early mitral closure or pulmonary hypertension)	Urgent	I	B
Aortic or mitral IE with severe regurgitation and no HF	Elective	IIa	B

Indication 2: uncontrolled infection

Recommendations: Indications for surgery	Timing*	Class[a]	Level[b]
B - UNCONTROLLED INFECTION			
Locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation)	Urgent	I	B
Persisting fever and positive blood cultures > 7-10 days	Urgent	I	B
Infection caused by fungi or multiresistant organisms	Urgent/elective	I	B



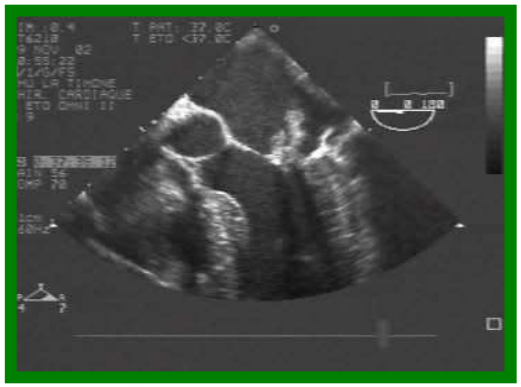


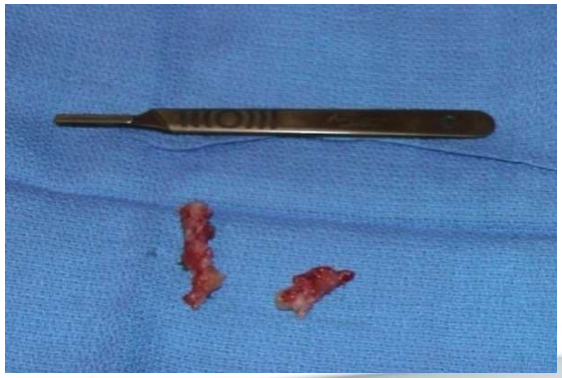


Indication 3: embolic events

Recommendations: Indications for surgery	Timing*	Class[a]	Level[b]
C - PREVENTION OF EMBOLISM			
Aortic or mitral IE with large vegetations (> 10 mm) following one or more embolic episodes despite appropriate antibiotic therapy	Urgent	I	B
Aortic or mitral IE with large vegetations (> 10 mm) and other predictors of complicated course (heart failure, persistent infection, abscess)	Urgent	I	C
Isolated very large vegetations (> 15 mm)#	Urgent	IIb	C

Surgery may be preferred if procedure preserving the native valve is feasible

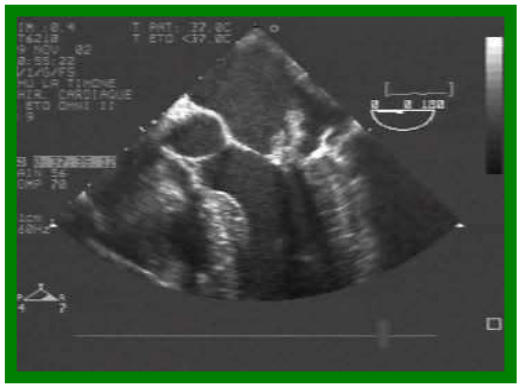


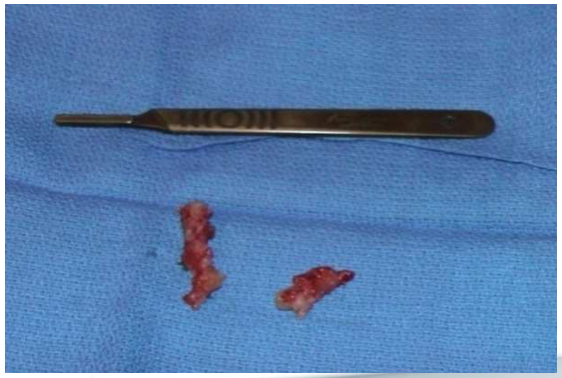


New guidelines: timing of surgery

Recommendations: Indications for surgery	Timing*	Class[a]	Level[b]
C - PREVENTION OF EMBOLISM			
Aortic or mitral IE with large vegetations (> 10 mm) following one or more embolic episodes despite appropriate antibiotic therapy	Urgent	I	B
Aortic or mitral IE with large vegetations (> 10 mm) and other predictors of complicated course (heart failure, persistent infection, abscess)	Urgent	I	C
Isolated very large vegetations (> 15 mm)#	Urgent	IIb	C

Surgery may be preferred if procedure preserving the native valve is feasible





Conclusion: imaging in IE

1. **key role of echocardiography, but diagnosis is still sometimes difficult**

2. **major role for prognostic assessment**
   - **hemodynamic risk**
   - **infectious risk**
   - **embolic risk**

3. **potential role of other imaging techniques**
   - **CT scan**
   - **MRI**
   - **Positron Emission Tomography**

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11-14 December 2013

Main Themes

- **Heart Failure**
- **Imaging in Interventional Cardiology**

Important deadlines

Abstract Submission 31 May 2013

Early Registration 30 September 2013

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