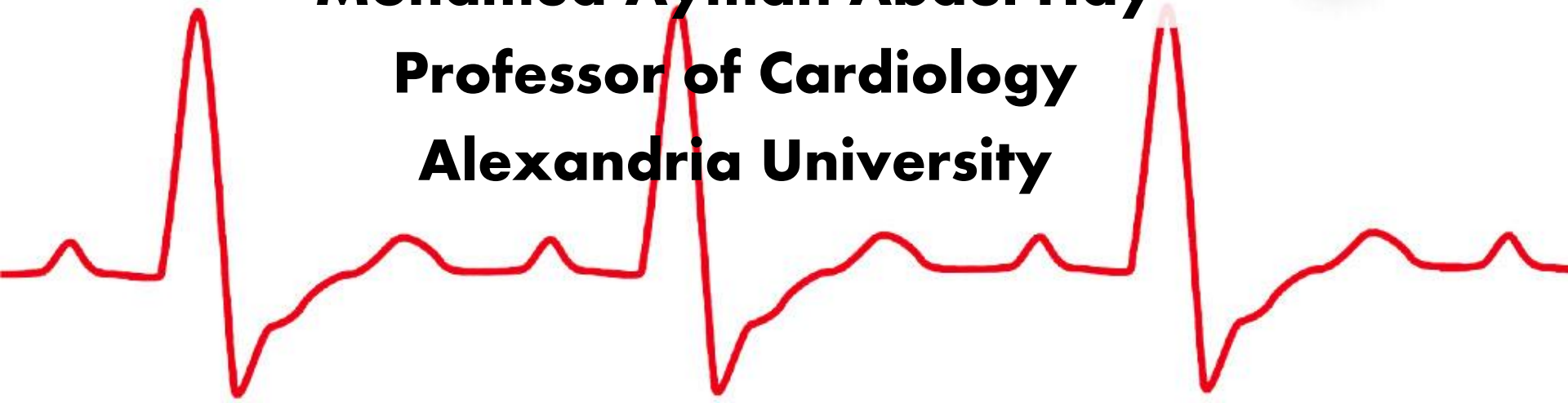




Intracardiac Device Related IE Echo Diagnosis



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RIGHT- SIDED INFECTIVE ENDOCARDITIS

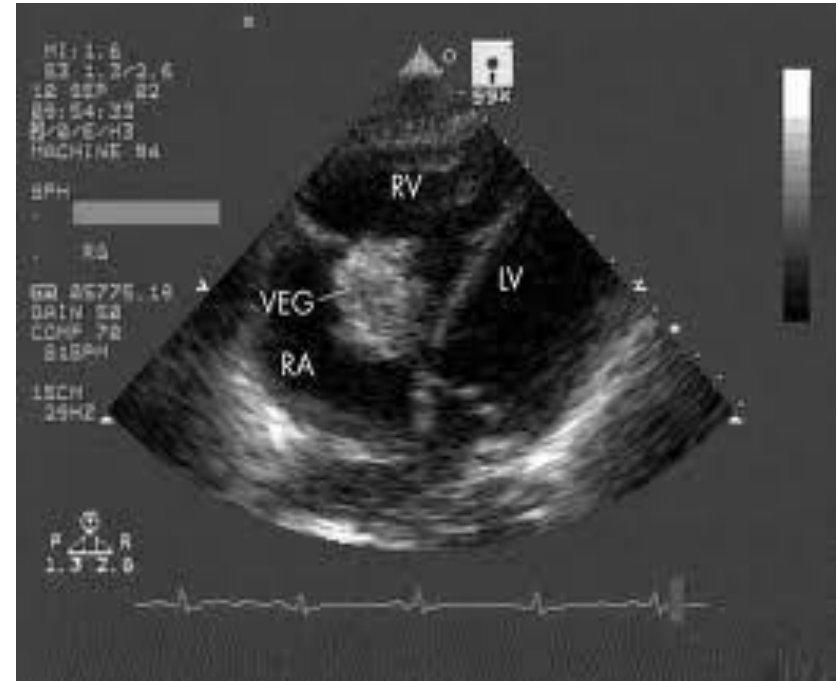
- **Prevalence**

rare (5-10 % of all IE)
...but increasing

- **Types**

1. **Intravenous drug abusers**

2. **Health care associated (PPM, ICD, CVC; CHD)**



RIGHT SIDED ENDOCARDITIS

BETWEEN IV DRUG ABUSE AND HEALTH CARE ASSOCIATED

Are they The Same ??

It is not a single disease but **two different diseases** with different epidemiology, pathology, pathophysiology, clinical features, diagnosis, treatment and prognosis

RIGHT SIDED ENDOCARDITIS

IV DRUG ABUSE

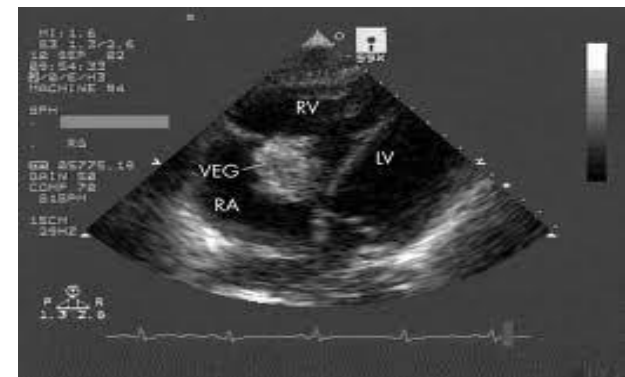
Usually the good guy

Usually easy to diagnosis

Usually TTE

Usually medical treatment

Usually good prognosis



RIGHT SIDED ENDOCARDITIS

HEALTH CARE ASSOCIATED:

Intracardiac Device Related IE

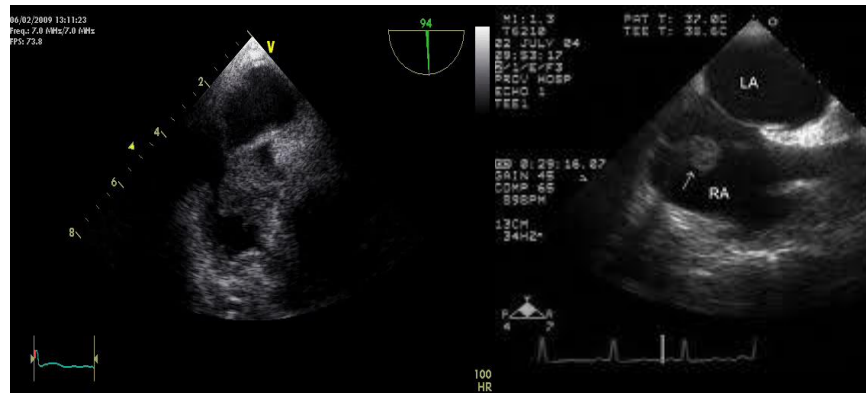
Usually the bad guy

Usually difficult to diagnosis

Usually TEE

Usually medical treatment+ lead extraction

Usually less good prognosis

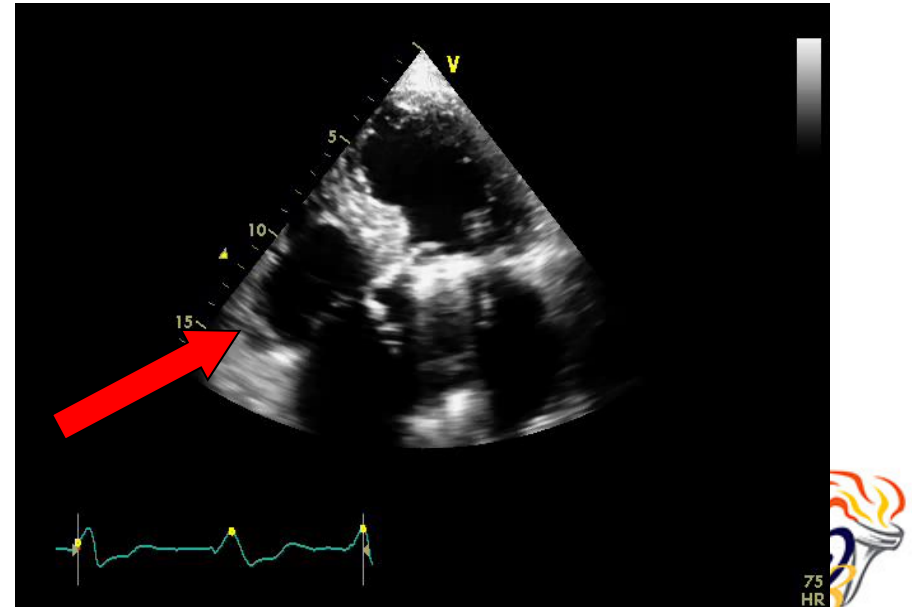


Intracardiac Devices Related IE



Intracardiac Devices Related IE

- Permanent pace-makers, implantable cardioverter defibrillators, 1.9/1000 devices per year
- Severe disease, high mortality



Intracardiac Devices Related IE

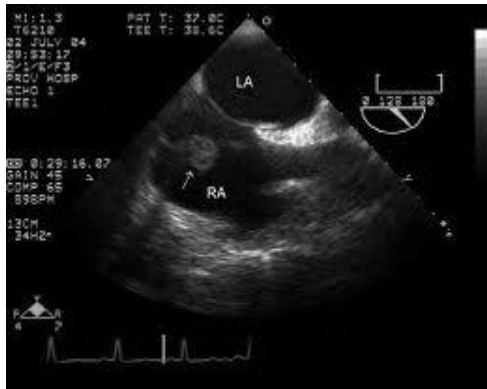


Important difficult distinction



Local device infection

infection of the pocket of the device, with local inflammation



VS

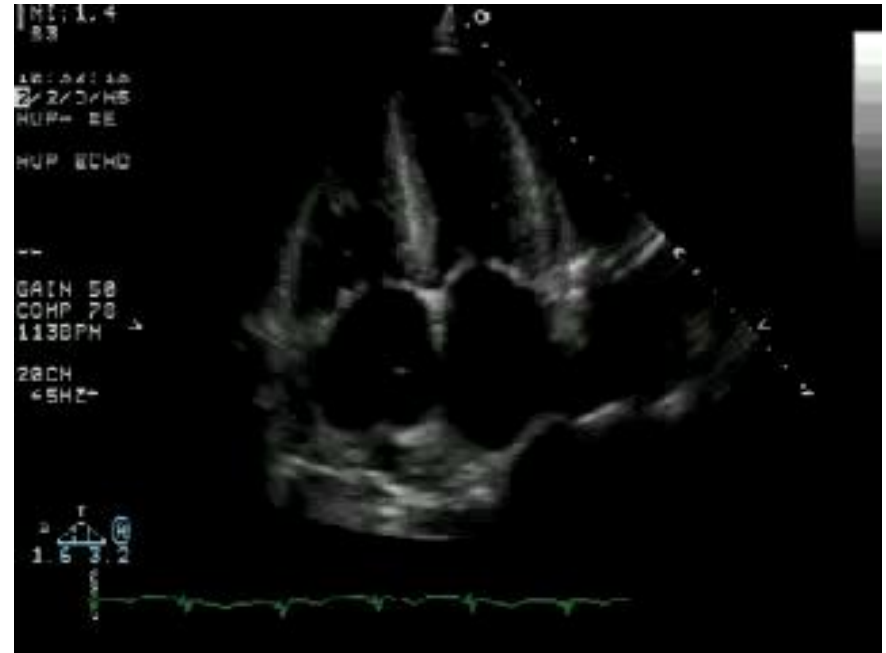


Cardiac device related endocarditis

Infection extending to electrode leads/catheter tip, valve leaflets

Intracardiac Devices Related IE

- 0, 13 – 7% implantations
- *Staphylococcus*
- Early (< 1 year)/ Late



Intracardiac Device Related Infective Endocarditis

DIAGNOSIS

Duke criteria

Clear deficiencies remain and **clinical judgement** remains essential, especially in negative blood cultures, prosthetic valve or intracardiac devices_endocarditis

Modified Duke criteria → new major criteria in device IE

- local signs of infection
- Pulmonary embolism

Klug, Circulation 1997



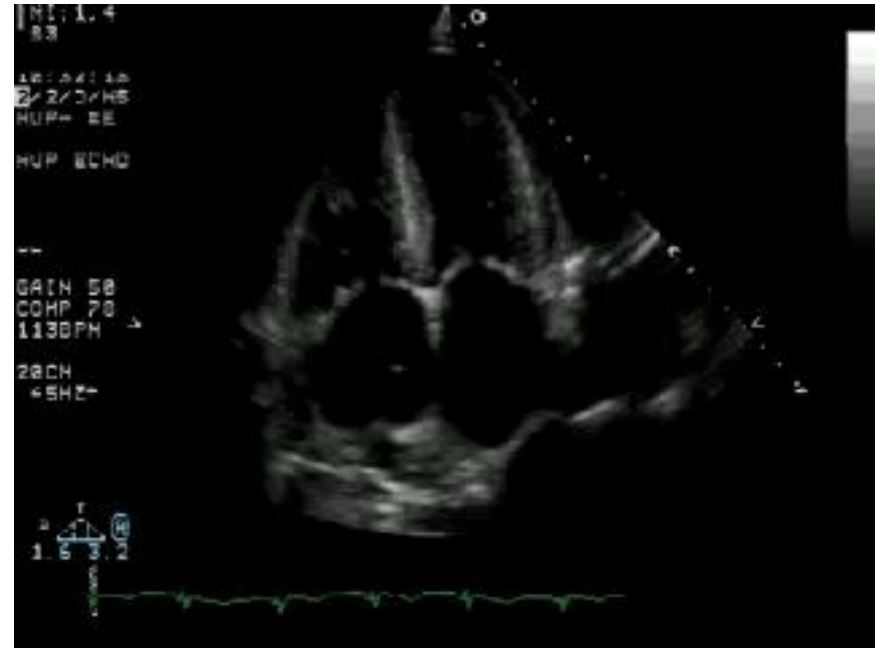
ONE OF THE MOST DIFFICULT FORMS OF IE TO DIAGNOSE!!!!

Misleading clinical presentation, respiratory or reumathological symptoms, particularly in the elderly

Unexplained fever in a patient with a cardiac device

→ exclusion of device IE

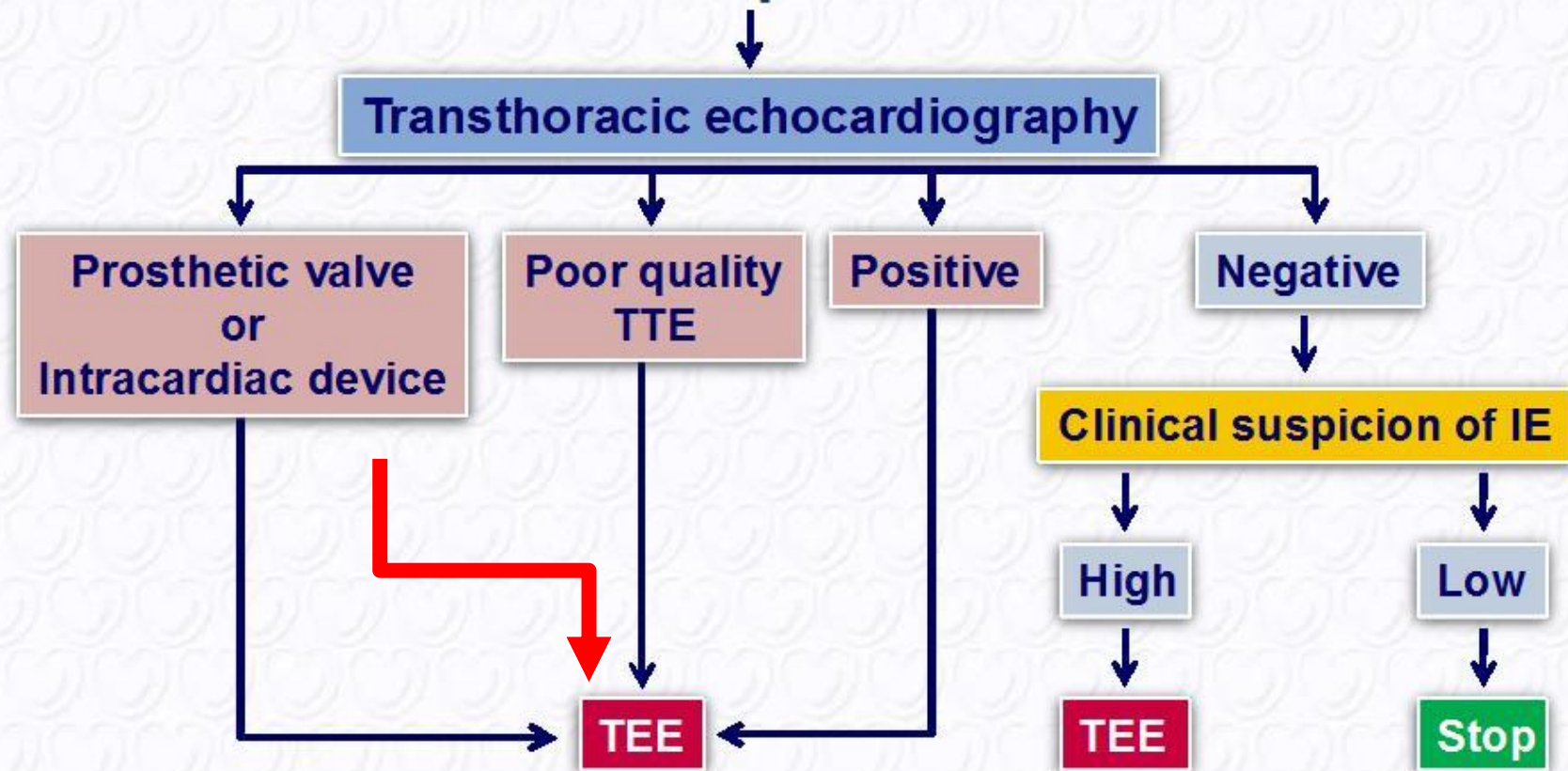
Intracardiac Devices Related IE



- Difficult diagnosis – **TTE** (< sensitivity, < specificity)
 - Reverberations, artifacts
 - DD thrombus, calcium

Indications for echocardiography

Clinical suspicion of IE



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

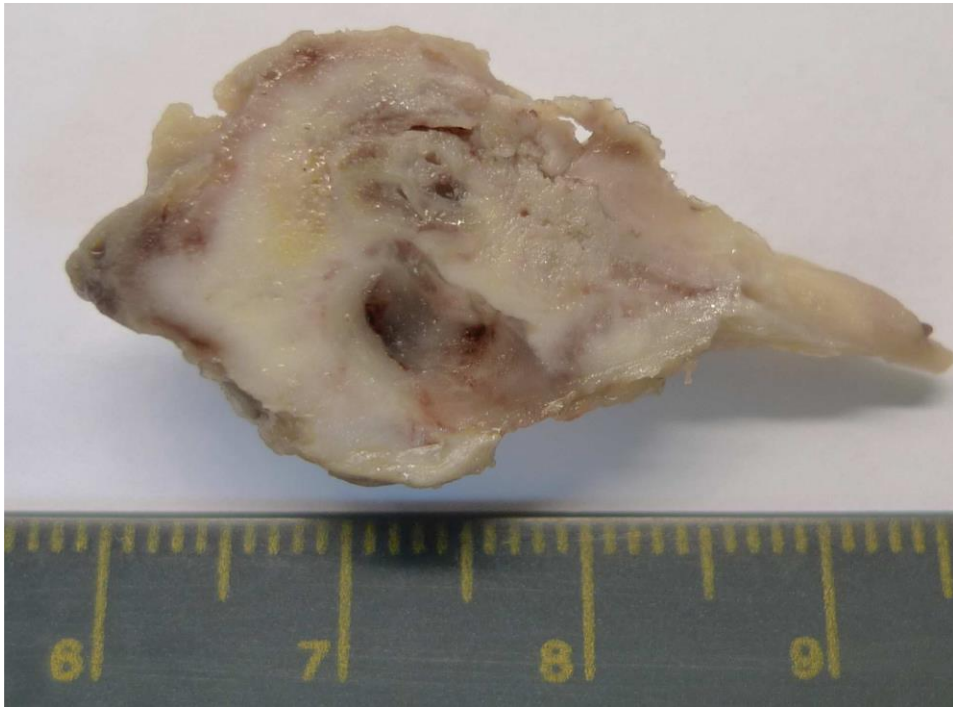
Anatomic and echo definitions

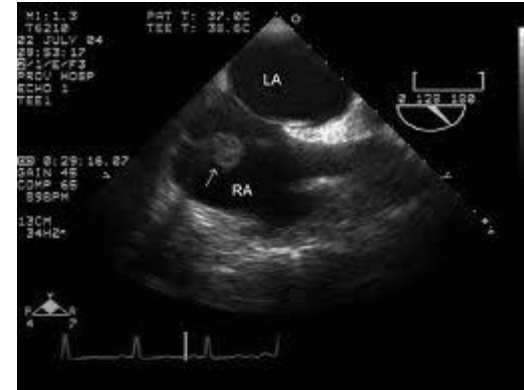
	Surgery / Necropsy	Echocardiography
Vegetation	Infected mass attached to an endocardial structure or an implanted intracardiac material	Oscillating or non oscillating intracardiac mass or other endocardial structures or non implanted intracardiac material
Abscess	Perivalvular cavity with necrosis and purulent material not communicating with the cardiovascular lumen	Thickened non-hogeneous perivalvular area with echodense or echolucent appearance
Pseudoaneurysm	Perivalvular cavity communicating with the cardiovascular lumen	Pulsatile perivalvular echo-free space with colour-Doppler flow detected
Perforation	Interruption of endocardial tissue continuity	Interruption of endocardial tissue continuity traversed by colour Doppler flow
Fistula	Communication between 2 neighbouring cavities through a perforation	Colour-Doppler communication between 2 neighbouring cavities through a perforation
Valve aneurysm	Saccular outpouching of valvular tissue	Saccular bulging of valvular tissue
Dehiscence of a prosthetic valve	Dehiscence of the prosthesis	Paravalvular regurgitation identified by TTE/TTE with or without rocking motion of the prosthesis

Role of echocardiography in IE (2)

Recommendations	Class	Level
B. Follow-up under medical therapy:		
1. Repeat TTE and TEE is recommended as soon as a new complication of IE is suspected.	I	B
2. Repeat TTE and TEE should be considered during F.U. of uncomplicated IE: time & mode depend on the initial findings, type of microorganisms and initial response to treatment.	Ila	B
C. Intraoperative echocardiography Recommended in all cases of IE requiring surgery.	I	C
D. Following completion of treatment TTE is recommended at completion of antibiotic treatment for evaluation of cardiac and valve morphology and function.	I	C

TEE





ECHOCARDIOGRAPHY

Always **TTE** and **TEE**

False negatives frequent → **normal TTE and TEE**
does not rule out



Thank you

