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What we know about...

FDG-PET IN INFECTIVE ENDOCARDITIS

... and what we want to know



DISCLOSURES

- None



WHAT WE WILL TALK ABOUT HERE

- PET
- Other NM – i.e., white blood cell studies

- What we won't talk about
 - MRI
 - CT
 - Echo

HOW USEFUL IS FDG-PET IN DIAGNOSIS OF INFECTIVE ENDOCARDITIS?

- Very
- Numerous cases, series in the literature
- Meta-analysis

ORIGINAL ARTICLE



Meta-analysis of ^{18}F -FDG PET/CT in the diagnosis of infective endocarditis

Maryam Mahmood, MbChB,^a Ayse Tuba Kendi, MD,^b Saira Ajmal, MD,^a

(J Nucl Cardiol 2019;26:922–35.)



META-ANALYSIS

- 13 studies; 537 patients
- Useful for diagnostic purposes
- Especially for prosthetic valves – increases sensitivity: modified Duke about 70%; with FDG-PET => 97%
- NVE not so good => poor sensitivity figures
- Potential also for detecting extracardiac foci
 - Potentially difficult because of glucose metabolism in brain
 - Articles: beware of personal bias and opinion rather than objective evidence
- Potential mimics: active thrombi, soft atherosclerotic plaques, vasculitis, primary cardiac tumours
- Potential confounder also if recent surgery

WHAT DO THE GUIDELINES SAY?



European Heart Journal (2015) **36**, 3075–3123
doi:10.1093/eurheartj/ehv319

ESC GUIDELINES

2015 ESC Guidelines for the management of infective endocarditis

The Task Force for the Management of Infective Endocarditis of the European Society of Cardiology (ESC)

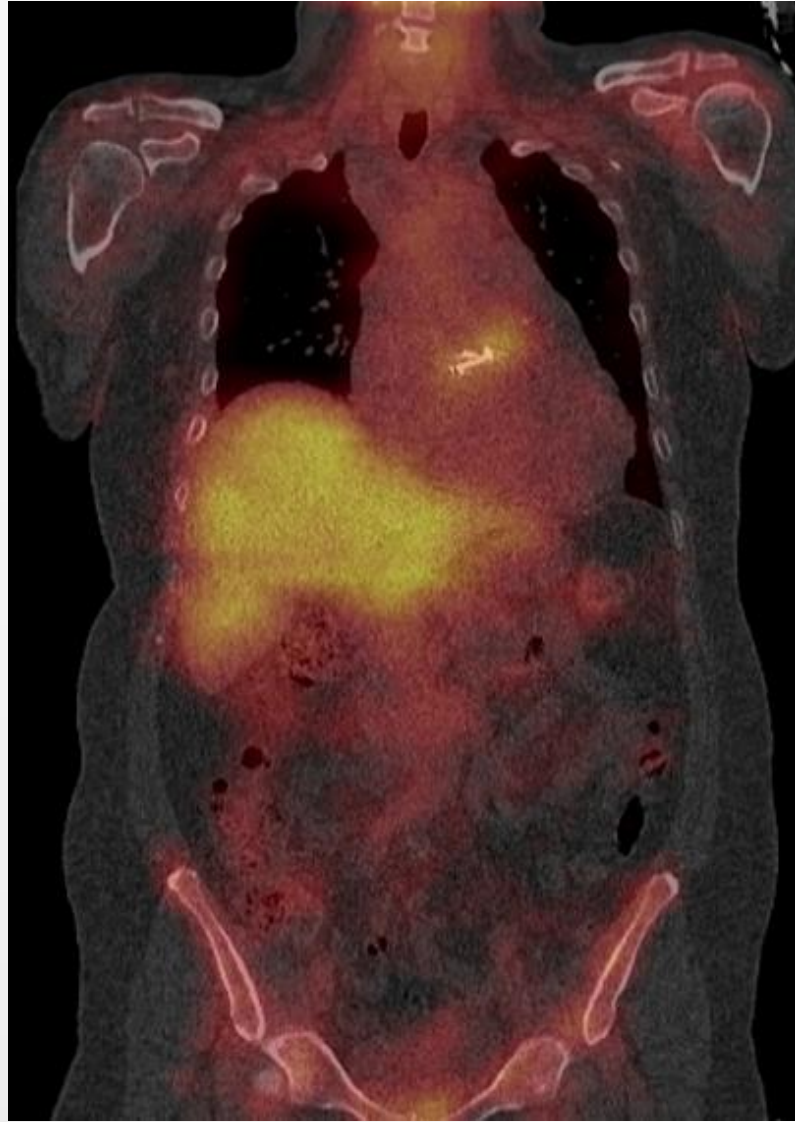
Endorsed by: European Association for Cardio-Thoracic Surgery (EACTS), the European Association of Nuclear Medicine (EANM)

Authors/Task Force Members: Gilbert Habib* (Chairperson) (France),

- Those mimics and confounders mentioned
- PET more sensitive, WC more specific







FDG-PET VS WHITE CELL SCINITIGRAPHY

LETTER TO THE EDITOR



Nuclear imaging in the diagnosis of infective endocarditis

doi:10.1007/s12350-019-01819-4 *Joseph C. Lee, MBBS, FRACP, FAANMS,^{a,d}
Yong S. Wee, MBBS, FRACP,^{b,d}
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- The response to us:
 - PET is more convenient as a diagnostic modality as it has a rapid turnaround time and has improved spatial resolution
 - Does not require blood handling and radiolabeling of WBCs
 - Can identify metastatic foci of infection, such as septic arthritis, vertebral osteomyelitis or muscle abscess, that were not found on CT or SPECT
- I was actually hoping they'd talk about recent developments and that guidelines were quite dated



PET FOR IE IN AUSTRALIA...

- It is not rebated by Medicare currently
- It is done rarely for this indication
- There are few experts in this area



THE PAPER ON PROGNOSIS

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Prognostic Value of ^{18}F -Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography in Infective Endocarditis



Sovannarith San, MD,^a Eleonore Ravis, MD,^a Laetitia Tessonier, MD,^b Mary Philip, MD,^a Serge Cammilleri, MD,^b

- Prospective study of 173 patients; median age 67 years
- Left-sided only; excluded right-sided and devices
- Sensitivity much higher for PVE than NVE



- Most useful:
 - Prosthetic valves
 - High CRP level (> 40 mg/L)
 - Paravalvular complications present
- Higher uptake (using liver level as calibrator) = higher risk of complications:
 - Heart failure
 - In-hospital or 1-year death
 - Recurrence
 - New embolism
 - Re-hospitalisation
- Followed up clinically at 1/3/6/12 months
 - Assume PET only at time of diagnosis (?)

WHAT WE DON'T KNOW... ... AND WOULD LIKE TO KNOW...

- How to use PET to guide treatment
- Something to work towards
- What we need:
 - To be able to show that treatment can be discontinued when there are certain FDG-PET findings (or FDG uptake at a certain level)
 - Prospective (ideally randomised) evaluation in a large cohort
- Alternative:
 - To be able to tell from pre-treatment FDG-PET as to how long is needed for treatment

SUMMARY

- PET is useful for IE
- Especially for prosthetic valves
- Not so good for native valves
- Good for prognosis
- Unknown how to use it for treatment monitoring and management
- We would like to know