Abstract: 3330

**18F-Fluorodeoxyglucose Positron Emission Tomography Computed Tomography (PET/CT) for the diagnosis of prosthetic valve infective endocarditis (PVIE): a prospective multicenter study.**

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**Topic(s):**
Infective Endocarditis – Diagnostic Methods: Imaging

**Citation:**

**Background and Objectives:**
18F-FDG PET/CT has recently been added as a major criterion in the ESC 2015 infective endocarditis (IE) guidelines, but the value of this new diagnostic algorithm has never been prospectively assessed.

**Purposes**:

1. Primary objective: To assess the value of the new ESC criteria including 18F-FDG PET/CT in prosthetic valve infective endocarditis (PVIE).
2. Secondary objectives:
   - to determine the reproducibility of 18F-FDG PET/CT
   - to assess its ability to predict embolic events

**Methods**:

Between 2014 and 2017, 175 patients with suspected PVIE were prospectively included in 3 French centers. After exclusion of patients with uninterpretable or not feasible PET/CT, 115 patients were finally included in the analysis, including 91 definite IE and 24 rejected IE, as defined by an expert Consensus of Endocarditis Team after 3-month follow-up as Gold Standard

Nuclear data were blindly analyzed by two independent nuclear medicine physicians.

Patients follow-up was scheduled at one and three months after hospitalization

**Results**:

Significant cardiac uptake by PET/CT (major criterion) was observed in 67 among 91 patients with definite PVIE and 6 patients with rejected IE (sensitivity 73.6%, specificity 75%, positive predictive value 91%, negative predictive value 42%). Considering cardiac uptake as a major criterion, the ESC 2015 classification increased the sensitivity of Duke criteria from 57 to 84% (p<0.001) but decreased its specificity from 84 to 70% (p<0.001).

Intraobserver reproducibility of cardiac uptake evaluation was good (kappa = 0.84) but inter observer reproducibility was less satisfactory (kappa = 0.63).
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Embolic events occurred in 31 patients (27%) and were correlated with vegetation size by ECHO (p<0.001), Staphylococcus infection (p=0.003), and PET/CT cardiac uptake (p=0.02).

Conclusion:
1 – the value of PET CT and ESC criteria is confirmed and may allow earlier diagnosis of PVIE
2 – PET CT is associated with an increased risk of false positive results probably related to the technical improvements
3 - Reproducibility of nuclear measurements seems unsatisfactory, justifying efforts to standardize PET studies interpretation
4 – Our study describes for the first time a positive correlation between a positive PET/Ct and occurrence of embolic events, warranting additional studies.