

Programme and abstracts



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[FP52] THE USE OF PET-CT REDUCE MORTALITY IN PATIENTS WITH IMPLANT RELATED INFECTION ASSOCIATED STAPHYLOCOCCUS AUREUSBACTEREMIA (SAB)

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**Aim:** *Staphylococcus aureus* bacteremia (SAB) is associated with significant morbidity and mortality, 20-30 % risk of infection in patient with implant related infection (IRI) .18F-FDG PET/CT is helpful in the management of SAB, leading to detection of more metastatic foci and treatment modification and finally decrease relapses and mortality rate (1). Our objective was to analyze mortality in high risk SAB patients undergoing 18F-FDG PET/CT and to see whether it's use in patients with IRI reduced their mortality.

**Method:** We performed a retrospective study at a university hospital in Belgium. All cases of high risk adult SAB between January 2014 and June 2017 were reviewed. We collected the clinical characteristics including presence of metastatic foci on 18F-FDG PET/ CT, mortality at 1 year.

**Results:** A total of 102 patients were included. Twenty-one patient with IRI were identified (20.6%). In 94.1 % (N=96) SAB were due to methicillin-sensitive *staphylococcus aureus* (MSSA). 18F-FDG PET/ CT was performed in 47% (N =48) of patients and a metastatic foci was identified in 45.8% of cases (N=22/48). The detection of metastatic foci lead to surgical intervention in a site other than the site of IRI in 38% versus 14% (P < 0.001) in patients undergoing or not 18F-FDG PET/CT respectively. The overall mortality rate was 31.3 % (32/102). The mortality rate was 16.6% (8 /48) and 41.3 % (24/54) in patients undergoing or not 18F-FDG PET/ CT respectively (P=0.03). For IRI, the overall mortality was 9.3 % versus 15.6% in patients undergoing or not 18F-FDG PET/ CT respectively (P<0.001). There was a significant difference in mortality rate at 30 (P=0.001), 90 days (P=0.01) and one year (P=0.004) between patients undergoing or not 18F-FDG PET/ CT respectively. In bivariate analysis, the overall, 30, 90 days and one year mortality rate was significantly reduced among patient with kidney failure (P< 0.001), diabetic foot infection (P=0.006), age >70 years (P=0.007) and prosthetic joint or plate infection (P< 0.001) in whom the 18F-FDG PET/ CT was performed.

**Conclusions:** Mortality rate was reduced in high risk SAB patients undergoing 18F-FDG PET/ CT. The use of 18F-FDG PET/CT reduced mortality in patients with PJI by detecting more metastatic site leading to more aggressive treatment.

1. Berrevoets MAH, Kouijzer IJE, Aarntzen EHJG, Janssen MJR, De Geus-Oei LF, Wertheim HFL, et al. <sup>18</sup>F-FDG PET/CT Optimizes Treatment in *Staphylococcus Aureus* Bacteremia and Is Associated with Reduced Mortality. J Nucl Med. 2017;58(9):1504-1510.

[FP53] CLINICAL EVALUATION OF SYNOVIAL ALPHA DEFENSIN AND SYNOVIAL C-REACTIVE PROTEIN IN THE DIAGNOSIS OF PERIPROSTHETIC JOINT INFECTION

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**Aim:** Diagnosing periprosthetic joint infection after total joint arthroplasty is often challenging. The alpha defensin test has been recently reported as a promising diagnostic test for periprosthetic joint infection. The goal of this study was to determine the diagnostic accuracy of alpha defensin testing.

**Method:** One hundred and eighty-three synovial alpha defensin and synovial fluid C-reactive protein (CRP) tests performed in 183 patients undergoing evaluation for periprosthetic joint infection were reviewed. Results were compared with the Musculoskeletal Infection Society (MSIS) criteria for periprosthetic joint infection.

**Results:** Alpha defensin tests were performed prior to surgical treatment for infection, and 37 of these patients who had these tests were diagnosed by MSIS criteria as having infections. Among this group, the alpha defensin test had a sensitivity of 81.1% (95% confidence interval [CI], 64.8% to 92.0%) and a specificity of 95.9% (95% CI, 91.3% to 98.5%). There were 6 false-positive results, 4 of which were associated with metallosis. There were 7 false negatives, all of which were associated with either draining sinuses (n = 3) or low-virulence organisms (n = 4). A combined analysis of alpha defensin and synovial fluid CRP tests was performed in which a positive result was represented by a positive alpha defensin test and a positive synovial fluid CRP test (n = 28). Among this group, the sensitivity was calculated to be 73.0% (95% CI, 55.9% to 86.2%) and the specificity was calculated to be 99.3% (95% CI, 96.2% to 99.9%). An additional combined analysis was performed where a positive result was represented by a positive alpha defensin test or positive synovial fluid CRP test (n = 64). Among this group, the sensitivity was calculated to be 91.9% (95% CI, 78.1% to 98.3%) and the specificity was calculated to be 79.5% (95% CI, 72.0% to 85.7%).

**Conclusions:** Alpha defensin in combination with synovial fluid CRP demonstrates very high sensitivity for diagnosing periprosthetic joint infection, but may yield false-positive results in the presence of metallosis or false-negative results in the presence of low-virulence organisms. When both alpha defensin and synovial fluid CRP tests are positive, there is a very high specificity for diagnosing periprosthetic joint infection.