203. Correlating Cardiac PET Results with Intra-Operative Findings in Infectious Endocarditis

Sami El-Dalati, MD; Richard Weinberg, MD, PhD; Venkatesh Murthy, MD; Anna Owczerczyk, MD, PhD; Jamie Riddell, IV, MD; Sandro Cinti, MD and Christopher Fagan, MD; Fellow, Ann Arbor, Michigan; University of Michigan, Ann Arbor, Michigan

Session: 37. Bacteremia, CLABSI, and Endovascular Infections Thursday, October 3, 2019: 12:15 PM

**Background.** Care for patients with infectious endocarditis is complicated by delays in diagnosis and relatively low sensitivity of existing diagnostic algorithms, particularly the Duke Criteria. In recent years, cardiac positron emission tomography (PET) has been identified as a useful tool in detecting occult endocardial infections. Multiple prospective studies have demonstrated that when incorporated with conventional imaging modalities cardiac PET can improve the sensitivity of the Duke Criteria by 27–38 percent. These studies used as their gold standard for diagnosis the consensus opinion of an endocarditis team and were characterized by a relatively low percentage of patients who underwent surgery. We reviewed 4 years of surgically managed IE cases at a tertiary care center where cardiac PET was used to aid diagnosis.

**Methods.** Between July 1, 2014 and December 31, 2018 we retrospectively reviewed 68 surgically managed cases of endocarditis. Cases were identified using ICD-9 and ICD-10 codes of patients who underwent surgical valve replacement for endocarditis as well as all patients who had cardiac PET scans to rule out endocarditis. Variables including PET results, operative findings, valve culture, pathology and PCR testing were recorded.

**Results.** 14 patients were identified who underwent cardiac PET prior to their surgical intervention. 9 cases were classified as possible endocarditis by Duke Criteria and 10 involved prosthetic valves. 12/14 scans were interpreted as suggestive of or consistent with endocarditis. Twelve positive PETs were associated with either operative findings of infection and/or positive PCR testing on the excised valve (positive predictive value: 100%). The 2 patients with negative scans were found to have noninfectious vegetations intra-operatively, negative valve cultures and negative pathology.

**Conclusion.** Cardiac PET correlates closely with intra-operative findings in patients with endocarditis. In patients with suspected endocarditis it may help guide surgical decision making. Cardiac PET should be considered for addition to the Modified Duke’s Criteria similar to the European Society of Cardiology guidelines.

**Disclosures.** All authors: No reported disclosures.
Background. There is a concern that the vancomycin MIC of methicillin-resistant Staphylococcus aureus (MRSA) could be increased by concomitant colistin administered against multidrug-resistant gram-negative pathogens.

Methods. We confirmed the molecular genotypes of MRSA blood isolates collected in a tertiary hospital in Seoul, South Korea, and selected representative strains from the community-associated MRSA strains (CA-MRSA, ST72-SCCmec IV) and hospital-acquired MRSA strains (HA-MRSA, ST5-SCCmec II). USA CA-MRSA (USA300, ST8-SCCmec IV) and MRSA standard strain (ATCC 43300, ST39-SCCmec II) were also used for comparison with representative. We identified changes of the vancomycin MIC in MRSA by colistin exposure in a checkerboard assay and performed a time-kill assay to evaluate the combined effect of vancomycin and colistin on MRSA. In addition, we administered vancomycin, colistin, and combination of two antibiotics, respectively, to a neutropenic murine thigh infection model to evaluate the in vivo antagonistic effect of colistin on vancomycin treatment.

Results. In the checkerboard assay, all 4 MRSA strains showed a tendency for the vancomycin MIC to increase along with increasing concentrations of colistin. However, the time-kill assay showed the antagonism of vancomycin and colistin only against ST5-MRSA, when vancomycin concentration was 2 times the vancomycin MIC (Figure 1). No antagonism was observed in other strains. In the murine thigh infection model of ST5-MRSA, vancomycin monotherapy showed a significant log CFU reduction compared with a combination of vancomycin and colistin at 24 hours, demonstrating the antagonistic effect of vancomycin and colistin combination (Figure 2).

Conclusion. This study showed that exposure of colistin to certain MRSA strains may reduce the susceptibility to vancomycin. Combination therapy with vancomycin and colistin for MDR pathogens infections might result in treatment failure for concurrent MRSA infection.

205. Comparing Cefazolin and Nafcillin in Treatment of Methicillin-Susceptible Staphylococcus aureus Bacteremia: A Retrospective Study in a Single Center in the South Bronx

Chia-Yu Chiu, MD1; Amara Sarwal, MD1 and Addi Feinstein, MD1; 1Lincoln Medical Center, New York, New York

Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. Methicillin-Susceptible Staphylococcus aureus (MSSA) bacteremia treatment includes β-lactams as first-line therapy; however, comparative effectiveness within β-lactams has not been well studied in literature. Herein, we look at definitive treatment with nafcillin or cefazolin in patients with MSSA bacteremia.

Methods. This retrospective study included patients admitted at Lincoln Medical Center from January 2000 to March 2019 who had a positive blood culture for MSSA and was treated with either nafcillin or cefazolin. We excluded patients who received both nafcillin and cefazolin. In addition to this, included patients had to have (1) bacteremia alone with 14 days treatment after first negative blood culture or (2) endocarditis or osteoarthritis with 6 weeks treatment after first negative blood culture.

Results. Of the 186 patients identified to have at least one positive culture for MSSA during the study period, only Eighty-two patients met our set criteria. Seventy of our patients were treated with nafcillin while 12 patients were treated with cefazolin. Outcome measures included duration of bacteremia (P = 0.151), ICU admissions (P = 0.542) and development of Clostridium difficile (P = 0.475). All-cause 30 day mortality and recurrent MSSA bacteremia were not different between the two treatment groups with an incidence of 17% for cefazolin vs. 21% for nafcillin (P =1) and 1% for cefazolin vs. 0% for nafcillin (P =1), respectively.

Conclusion. The average price of nafcillin is approximately 174 USD/day, while cefazolin is 33 USD/day. In addition to being economically practical, especially in a city hospital such as Lincoln Medical Center, cefazolin also has the benefit of only being administered every 8 hours rather than every 4 hours that nafcillin requires. This decreases the need for staff and supplies, allowing for the cefazolin regimen to be administered more easily. In this single-center study, patients who received cefazolin and nafcillin had no statistically significant difference in incidence of recurrence of bacteremia or mortality rate therefore, physicians may consider prioritizing cefazolin for treatment of MSSA bacteremia.

Table 1. Characteristics of Patients with Methicillin-Susceptible Staphylococcus aureus Infections Complicated by Bacteremia Who Received Nafcillin or Cefazolin (N = 82)

| Characteristic | Nafcillin (n=70) | Cefazolin (n=12) | P value |
|---------------|-----------------|-----------------|---------|
| Male, n       | 50 (71%)        | 9 (75%)         | 1       |
| Age, mean ± SD, y | 52.6 ± 13.8     | 45.3 ± 19.3     | 0.115   |
| BMI, mean     | 27.4            | 26.0            | 0.531   |
| Allergy to penicillin | 2 (3%)         | 0 (0%)          | 1       |
| Exposure to vancomycin | 65 (93%)      | 10 (83%)        | 0.270   |
| Exposure to other β-lactams | 61 (87%)     | 12 (100%)       | 0.343   |

Comorbid disease

| HTN | 33 (47%) | 5 (42%) | 0.764 |
| Diabetes | 30 (43%) | 4 (33%) | 0.752 |
| Coronary artery disease | 8 (11%) | 0 (0%) | 0.596 |
| Heart failure | 8 (11%) | 1 (8%) | 1     |
| Stroke | 2 (3%) | 0 (0%) | 1     |
| Hemodialysis | 8 (11%) | 4 (33%) | 0.069 |
| Hematologic/oncologic disorder | 5 (3%) | 3 (25%) | 0.088 |
| IVDU | 34 (49%) | 5 (42%) | 0.505 |
| HIV | 18 (26%) | 1 (8%) | 0.278 |
| Hepatitis C | 23 (33%) | 6 (50%) | 0.099 |
| Sickle cell disease | 1 (1%) | 1 (8%) | 0.272 |

Disclosures. All authors: No reported disclosures.