Staphylococcus aureus

Long term administration of antibiotics is necessary for patients with high CRP levels after the administration of appropriate antibiotics, especially in the patients with community onset of infection. This study demonstrated that additional diagnostic tests to identify metastatic infection should be performed, especially in the patients with community onset of infection, which was associated with low rate of metastatic infection. By multivariate analysis, the predictive factors associated with the development of metastatic infection were community onset of infection [OR 11.6; 95% CI 2.98-45.6], persistent fever >72 hours [OR 7.47; 95% CI 2.39-24.8], and CRP >3 mg/dL lasting 2 weeks after treatment [OR 2.12; 95% CI 1.14-3.97]. S. aureus infections may cause poor prognosis. The aim of the present study is to determine the predictive factors of metastatic infections due to S. aureus.

Methods

A retrospective cohort study of all SAB cases in adults ≥20 years old in Jikei University Hospital from January 1 to December 31, 2017 was performed. We enrolled patients with metastatic infection. Patients with recent contact with the health care system before the blood culture result was obtained. Further analysis was performed with EZR, which is a graphical user interface for R [2]. More precisely, it is a modified R commander designed to add statistical functions frequently used in biostatistics.

Background

Staphylococcus aureus bacteremia is the second most frequent cause of nosocomial bloodstream infection and can cause metastatic infections.

Metastatic infections, such as infective endocarditis and pyogenic spondylitis, are very serious complications of Staphylococcus aureus bacteremia (SAB), because failure to identify metastatic infections may cause poor prognosis.

We have previously determined that treatment delay and persistent fever or persistently high CRP levels after appropriate treatment are predictive factors for metastatic infection in MSAa (MSSA and MRSA) bacteremia [1]. In the present study, we aim to clarify the predictive factors for metastatic infection in SAB (both MSSA and MRSA bacteremia) in order to administer antibiotics for appropriate period, so as not to fail treatment.

Patients

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Patients

We included patients who were admitted to Jikei University Hospital from January 1, 2014 to December 31, 2017. Patients were excluded from this study for the following reasons: (1) the number of hospitalizations was less than 3 months after the initial positive blood culture was obtained. We analyzed several factors, including demographics, comorbidity, community acquisition, primary site of SAB, persistent fever and laboratory data such as reactive protein C (PRP) levels after treatment.

Results

During the 4 years period study, 74 patients met inclusion criteria of this study. The most common infectious site was skin and soft tissue infections [24 (32.4%) of 74]. Metastatic infection occurred in 14 (26.9%) of 52 patients that were admitted to the hospital within 3 months after the initial positive blood culture was obtained. We did not find any significant differences between patients who did and did not have metastatic infections. Bacteremia caused by MRSA was associated with low rate of metastatic infection. By multivariate analysis, the predictive factors associated with the development of metastatic infection were community onset of infection [OR 11.6; 95% CI 2.98-45.6], persistent fever >72 hours [OR 7.47; 95% CI 2.39-24.8], and CRP >3 mg/dL lasting 2 weeks after treatment [OR 2.12; 95% CI 1.14-3.97]. S. aureus infections may cause poor prognosis. The aim of the present study is to determine the predictive factors of metastatic infections due to S. aureus.

Conclusions

This study demonstrated that additional diagnostic tests to identify metastatic infection should be performed, especially in the patients with community onset of infection, which was associated with low rate of metastatic infection. By multivariate analysis, the predictive factors associated with the development of metastatic infection were community onset of infection [OR 11.6; 95% CI 2.98-45.6], persistent fever >72 hours [OR 7.47; 95% CI 2.39-24.8], and CRP >3 mg/dL lasting 2 weeks after treatment [OR 2.12; 95% CI 1.14-3.97]. S. aureus infections may cause poor prognosis. The aim of the present study is to determine the predictive factors of metastatic infections due to S. aureus.

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Conclusions

This study demonstrated that additional diagnostic tests to identify metastatic infection should be performed, especially in the following patients:

- Patients with community-acquired Staphylococcus aureus bacteremia
- Persistent fever or persistently high CRP levels after the administration of appropriate antibiotics

References