Infections in neutropenia and stem cell transplantation

Does early empirical therapy for enterococcal bacteraemia in allogeneic haematopoietic stem cell transplantation recipients improve prognosis?

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Objectives: Data that provide evidence that early empirical therapy for enterococcal bacteraemia in allogeneic haematopoietic stem cell transplantation (allo-HSCT) patients improves prognosis are lacking. This study aimed to examine the impact of early empirically appropriate antibiotic therapy on the prognosis of monomicrobial enterococcal bacteraemia in allo-HSCT recipients.

Methods: We retrospectively reviewed the medical records of patients with enterococcal bacteraemia who were admitted at Toranomon Hospital in Tokyo (890 beds) and Kajigaya (300 beds), Japan, between January 2011 and August 2014. Enterococcus species were identified using MicroScan WalkAway96 SI systems. Empirically appropriate therapy (EAT) was defined as active therapy within 24 hours after obtaining blood cultures, whereas delayed appropriate therapy (DAT) was defined as active antibiotics administration after EAT completion.

Results: We reviewed 181 episodes of enterococcal bacteraemia in allo-HSCT recipients during the study periods, in which 122 cases were identified as monomicrobial enterococcal bacteraemia (18 cases of E. faecalis, and 104 cases of E. faecium). Vancomycin-resistant Enterococcus was detected in only 1 case. Fifteen cases for which no effective antibiotics were administered after obtaining blood cultures were excluded. EAT was observed in 33 cases, and DAT, in 74 cases. In the comparison between EAT and DAT groups, no significant differences were observed in the patients’ baseline characteristics (including severity according to the Pitt bacteraemia score, septic shock rate, or immunosuppressive conditions such as systemic corticosteroid use, immunosuppressive drug use, or neutropaenia). The median time from obtaining blood cultures to administering the appropriate antibiotic therapy was significantly different between the two groups (10 hours in the EAT group and 32 hours in the DAT group). The incubation time of the blood cultures until positivity was within 24 hours (mean time: 14 hours) in approximately 95% of patients. Between the EAT and DAT groups, no differences were observed in the 7- (6.1% vs. 5.4%, p = .87) and in 30-day crude mortality rates (24.2% vs. 23.0%, p = .86, Figure1). In the subgroup analysis of E. faecium bacteraemia, no significant differences were observed in the baseline characteristics and 7- or 30-day crude mortality between the EAT and DAT groups.

Conclusion: EAT for enterococcal bacteraemia in the allo-HSCT recipients were not associated with improved prognosis in the regions where most Enterococcus strains were susceptible to vancomycin. In Japan, appropriate antibiotic therapy, including vancomycin, could be administered only when Enterococcus species are detected in the blood cultures.

Figure 1. Kaplan-Meier curve between DAT and EAT