

Infections in neutropenia and stem cell transplantation

Early empirically appropriate antibiotic therapy for *Enterococcus* bacteraemia in allogeneic haematopoietic stem cell transplantation recipients during neutropenia is not associated with improved prognosis

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Objectives: This study aimed to examine the effect of early empirically appropriate antibiotic therapy on the prognosis of enterococcal bacteraemia in allogeneic haematopoietic stem cell transplantation (allo-HSCT) recipients during neutropaenia.

Methods: We retrospectively reviewed the medical records of patients with enterococcal bacteraemia 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 115 episodes of febrile neutropaenia with enterococcal bacteraemia (12 episodes of *E. faecalis*, 102 of *E. faecium*, 1 of *E. gallinarum*, and 2 of *Enterococcus* species) in the allo-HSCT recipients during the study period. Vancomycin-resistant *Enterococcus* was detected in only 1 case. Two episodes of co-infection with different *Enterococcus* species occurred (2 cases each of *E. faecalis* and *E. faecium* co-infection). Eight cases for which no effective antibiotics were administered after obtaining blood cultures were excluded. EAT was observed in 35 cases, and DAT was observed in 72 cases. In the comparison between the EAT and DAT groups, no significant differences were observed in the patients' baseline characteristics (including severity according to the Pitt bacteremia score [PBS], septic shock rate, or immunosuppression). Severe cases defined by a PBS score (> 4) were detected in 4 cases in the EAT group and 2 cases in the DAT group, accounting for only 5.6% of EAT and DAT cases. The median time from obtaining blood cultures to administering the appropriate antibiotic therapy was 11 hours in the EAT group and 32 hours in the DAT group. The blood culture incubation time until positivity was within 24 hours (mean time: 13 hours) in 99% of patients. Between the EAT and DAT group, no differences were observed in the crude 7 (8.6% vs. 8.3%, $p = .92$) and 30-day crude mortality rates (25.7% vs. 26.4%, $p = .99$, Figure1). In the subgroup analysis of *E. faecium* bacteraemia, no significant differences were observed in the same between the two groups.

Conclusion: EAT for *Enterococcus* bacteraemia in the allo-HSCT recipients with febrile neutropaenia was not associated with improved prognosis. In Japan, appropriate antibiotics, including vancomycin, could be administered only when *Enterococcus* species are detected in blood cultures.

Figure 1. Kaplan-Meier curve between DAT and EAT

