Prevalence of Bacteremia/Fungemia and Pneumonia in Remission Induction Chemotherapy for Adult Acute Myeloid Leukemia from 1987 to 2005: Japan Adult Leukemia Study Group (JALSG)

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Background:
Remission induction (RI) chemotherapy for acute myeloid leukemia (AML) is one of the most intensive chemotherapy available. Antibiotic prophylaxis and prompt treatment for infectious complications during RI chemotherapy plays a major role in supportive care.

Methods:
We retrospectively analyzed the infectious complications associated with RI chemotherapy listed in the Japan Adult Leukemia Study Group (JALSG) protocols, a nationwide study of de-novo AMLs, conducted between 2001 and 2005 in Japan. Of the 1057 cases initially included in the AML201 study, 980 cases with data on infectious complications during RI chemotherapy were analyzed. The incidences of infectious complications and the causative pathogens were compared with previous studies [period A 1987–1991, 577 cases; (B) 1992–1995, 669 cases; (C) 1995–1997, 531 cases; (D) 1997–2001, 808 cases; (E) 2001–2005, 980 cases].

Results:
In study period E, the causative pathogens of bacteremia/fungemia were Staphylococcus epidermidis (20.9%), S. aureus (11.6%), Streptococcus sp. (14.0%), and other Gram-positive bacteria (12.6%); P. aeruginosa (12.8%) and other Gram-negative bacteria (10.5%); and fungi (9.3%). Pathogens causing pulmonary infections were Aspergillus sp. (15.8%), P. aeruginosa (7.9%), and other Gram-negative bacteria (6.9%) and Gram-positive bacteria (3.0%). Pulmonary aspergillosis was diagnosed mainly using serological test. The prevalence of bacteremia/fungemia was reported in 11.8%, 9.4%, 8.7%, 9.2%, and 8.3% of cases and pulmonary infections were reported in 24.6%, 16.9%, 13.9%, 12.9%, and 10.3% of cases in the study periods A, B, C, D, and E, respectively. The incidence of Gram-negative bacteremia was significantly lower in period E compared with the periods A, B, and C (2.0% vs. 4.9%, 3.7%, and 3.4%).

Conclusions:
The prevalence of Gram-positive bacteremia and pulmonary aspergillosis was higher in period E than in the periods A–D. This trend was possibly due to the wide use of fluoroquinolone prophylaxis in neutropenic patients and high performance of the serological test for aspergillosis. Sufficient monitoring for Gram-positive bacterial infection and mold infection is therefore essential during RI chemotherapy for AML.

Prevalence of bacteremia/fungemia of Japan Adult Leukemia Study Group (JALSG) protocols (Study period (%) 

Prevalence of bacteremia/fungemia of Japan Adult Leukemia Study Group (JALSG) protocols (Study period (%) 

Causative microorganisms in bacteremia/fungemia during remission induction chemotherapy (%)

Causative microorganisms in bacteremia/fungemia during remission induction chemotherapy (%)

Causative microorganisms in pulmonary infection during remission induction chemotherapy (%)

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