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Epidemiology of bacteremia after autologous hematopoietic stem cell transplantation in the absence of antibiotic prophylaxis

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Abstract

Introduction: Bacterial infections are frequent complications occurring after autologous hematopoietic stem-cell transplantation (AHSCT). Herein, we identified the bacterial ecology and its antibiogram in AHSCT patients. We assessed the incidence, contributing factors and outcome of prolonged neutropenia and bacteremia post-AHSCT in the absence of antibacterial prophylaxis.

Methodology: This is a retrospective chart review of 190 adult patients who underwent AHSCT for lymphoma and multiple myeloma, between 2005 and 2015 at a Lebanese hospital.

Results: Most of the isolated bacteria originated from urine (49%) followed by blood (30%) and were mainly Gram-negative (70%). Fluoroquinolone susceptibility was 57% among Gram-negative and Gram-positive isolates. Bacteremia was documented in 12.6% of the patients, with a predominant gram-negative etiology having 95% susceptibility to fluoroquinolones. The duration of neutropenia, < or > 7 days, did not affect the incidence of bacteremia (11% vs. 14% respectively, $p = 0.17$). Patients with lymphoma were more likely to have prolonged neutropenia compared to those with myeloma ($p < 0.0001$). The use of a central line and the development of central-line infections were significantly higher in Gram-positive bacteremia ($p = 0.03$, $p = 0.008$ respectively). Mucositis occurred more in Gram-negative bacteremia ($p = 0.02$). Total mortality rate was 3.7% in the whole population and that attributed to bacteremia was 12.5% in the bacteremia subgroup. Bacteremia was a predictor for mechanical ventilation ($p = 0.003$), septic shock and mortality ($p = 0.025$).

Conclusion: Since organisms causing bacteremia were still highly susceptible to fluoroquinolones and that the duration of neutropenia post-AHSCT didn't affect bacteremia, we concluded that fluoroquinolone prophylaxis is still valid yet, with close monitoring of resistance.

Key words: autologous; bacteremia; fluoroquinolones; hematopoietic stem cell transplantation; antibacterial prophylaxis; Lebanon.

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