

Section: CLINICAL

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Analysis of antimicrobial profiles and empirical vancomycin use in acute leukemia: a single-center retrospective cohort study

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INTRODUCTION: Febrile neutropenia (FN) is a frequent and potentially fatal complication among patients with acute leukemia undergoing chemotherapy. It is defined by severe neutropenia (neutrophils $<1,000/\text{mm}^3$) associated with fever $\geq 38.3^\circ\text{C}$ or $\geq 38^\circ\text{C}$ lasting more than one hour. The profound immunosuppression caused by chemotherapy increases the risk of severe infections, often with subtle or delayed clinical signs. Historically, treatment was initiated only after identification of the infectious agent, which led to high mortality rates. Over time, empirical broad-spectrum antimicrobial therapy became standard and significantly reduced case fatality. However, increasing bacterial resistance has made empirical antibiotic selection progressively more complex. In 2017, the Hematology Unit of Hospital Estadual Mário Covas changed its protocol by discontinuing prophylactic quinolones and neutropenic diets, restricting empirical vancomycin use, and introducing meropenem early for patients hospitalized for more than 30 days. **METHOD:** This retrospective cohort study assessed 221 episodes of FN in 136 patients with acute leukemia between 2016 and 2025. **RESULTS:** Gram-negative bacteria accounted for 75% of isolates, most commonly *Klebsiella pneumoniae* (36.8%). Empirical vancomycin was used in 56.8% of cases and provided no significant overall clinical benefit ($p=0.906$), although outcomes were better in confirmed Gram-positive infections ($\text{NNT}=8$). **DISCUSSION:** Intravascular device-related bloodstream infections and gastrointestinal tract infections were predominantly caused by Gram-positive microorganisms. Likewise, infections associated with peripheral venous access also showed a predominance of Gram-positive pathogens. Notably, sites classically considered suggestive of Gram-positive infection did not show this predominance. **CONCLUSION:** These findings reinforce the importance of tailoring protocols to the specific circumstances and microbiota of each institution.

KEYWORDS: Febrile neutropenia; Acute leukemia; Bacterial resistance; Vancomycin.