

(PB4226) PROGNOSTIC ANALYSIS OF FUNGAL BLOODSTREAM INFECTIONS IN HEMATOLOGIC DISEASES BASED ON NGS

Topic: 31. Infections in hematology (incl. supportive care/therapy)

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Background

Patients with hematologic diseases, particularly hematologic malignancies, often undergo intensive chemotherapy or allogeneic hematopoietic stem cell transplantation (allo-HSCT), which compromises immune function. The possibility of neutropenia accompanied by fever exceeds 80%, thereby increasing the risk of pathogen infection and the use of antimicrobial therapy. Fungal bloodstream infection is a rare type of infection in patients with hematological diseases. Antifungal drug therapy is usually used when empirical coverage of bacterial treatment is ineffective. However, once fungal bloodstream infection occurs, the prognosis of patients is extremely poor.

Aims

This study aims to evaluate the prognostic analysis of fungal bloodstream infection treatment in hematological diseases based on next-generation sequencing (NGS).

Methods

Hematological patients with fever who underwent mNGS examination at six blood disease centers nationwide from January 2020 to May 2023 were included. Univariate and multivariate logistic regression models were employed to analyze the risk factors for bloodstream infections in hematological disorders, and to evaluate the associations between empirical antifungal coverage against Mucorales, distinct antifungal therapeutic regimens, and long-term survival rates.

Results

A total of 205 hematological patients with fever were enrolled in this retrospective cohort study. The median follow-up time was 116 days (range, 0–1,650 days), and the median age was 45 years (range, 2–76 years); 61% of the patients were male. Observing the outcomes and survival of patients at 1, 3, and 6 months, the median survival time of all patients during the 6-month observation period was 119 days (0–180 days). Univariate and Cox regression analyses showed that gender, site of infection, mucormycosis, concomitant bacterial infections, gastrointestinal complications, and cardiac dysfunction were the main risk factors affecting patients' survival time within 6 months, as shown in Fig1. Further subgroup analysis was conducted on patients with mucormycosis infection, comparing empirical antifungal coverage against Mucor prior to mNGS detection and distinct therapeutic regimens. The results indicated that empirical coverage against Mucor may improve patient prognosis [hazard ratio (HR) 1.533, 95% confidence interval (CI) 0.712–3.298; $P = 0.275$]. Additionally, the therapeutic efficacy varied among different antifungal regimens, with superior outcomes observed in patients receiving amphotericin B monotherapy or combination therapy with amphotericin B plus isavuconazole/posaconazole.

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Summary/Conclusion

Gender, age, mucormycosis, concurrent bacterial infections, gastrointestinal bleeding, and cardiac dysfunction are risk factors affecting the survival time of patients with fungal bloodstream infections. Empirical treatment with antifungal agents can improve patient prognosis, with amphotericin B or a combination of amphotericin B and isavuconazole/posaconazole showing better efficacy in treating fungal infections compared to other regimens.

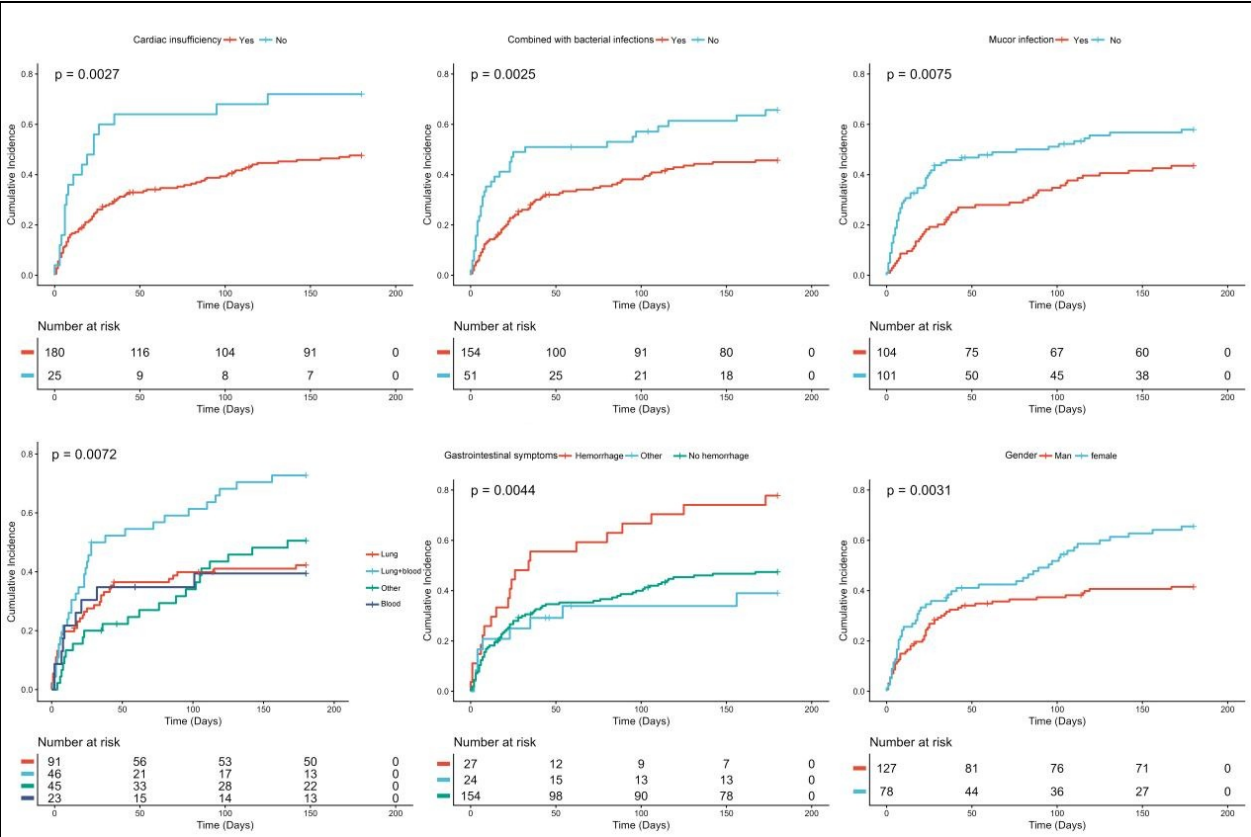


Fig. 1. Analysis of the impact of cardiac insufficiency, concomitant bacterial infection, Mucorales infection, site of infection, gastrointestinal complications, and sex on prognosis in hematological patients with fever within 6 months