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Mycology: Fungal infections

Which fungal pathogen should come to mind in patients with haematological malignancies, and when?

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Objective: We retrospectively evaluated the febrile neutropenia episodes of hematological patients and their outcomes with respect to fungal pathogens and antifungal therapy.

Methods: All consecutive patients older than 14 years of age and who developed febrile neutropenia episodes from September 2011 and September 2012 were incorporated into this study.

Results: We retrospectively analyzed 68 consecutive patients with neutropenia and their 129 febrile episodes. Mean age was 59.36±15.22 years (range: 17–80 years) and 41 cases were male. MASCC score was 19.56 ± 9.04 in the patients with hematological malignancies. Systemic antifungal drugs was initiated to eight patients with 10 culture-proven fungal infections, 20 patients with probable pulmonary aspergillosis infection who had GM positivity and thorax CT findings in 23 attacks, and 15 patients with possible pulmonary aspergillosis infection who had clinical findings with thorax CT findings in 17 attacks, and in 21 attacks of 20 patients with suspected invasive fungal infection.VOR, CAS and AM-B were used to treat in 40 episodes of 40 patients, 34 episodes of 27 patients and 12 episodes of 12 patients as first-line therapy, respectively. Two patients were treated with CAS due to hepatosplenic candidiasis depending on clinical and radiological findings. Central venous catheter could be removed from five of 10 patients whose blood cultures yielded yeast and two of those (40%) died.There was no proven infection associated with *Zygomycetes* or *Fusarium* species. Two patients with acute lymphocytic leukemia were treated with a combination of antifungal drugs as salvage therapy with AM-B combined with CAS and VOR combined with CAS due to persistent fever and negative culture, progression in thorax CT findings and deterioration. Both of those responded to combination therapy. Overall one-year crude mortality rates were 25% (17/68). The number of patients who died of infections was 12 (17%). Of 12 fatal cases associated with infection, four died of culture-proven or probable invasive fungal infections (Table).

Patient	Age	Gender	Hematologic malignancy	Sample	Isolated fungal pathogen	Antifungal Resistance	Empirical antifungal treatment before identification	Treatment modification	Outcome
1	50	Male	AML+Lung cancer	Blood	Candida parapsilosis		VOR	From VOR to AM-B, central line removed	Survived
				Blood	Candida albicans	-	VOR	-	Survived
2	61	Male	AML	Blood, urine	Candida albicans				Died
3	73	Female	NHL	Blood, urine	Candida albicans				Survived
				Blood, Central Line	Candida albicans	-	AM-B	Central line removed	Survived
4	35	Male	AML	Blood	Candida albicans		CAS		Survived
5	44	Female	ALL	Blood	Candida albicans		AM-B		Survived
6	63	Female	NHL	Blood	*Candida krusei*		VOR	Catheter removed	Survived
7	63	Female	AML	Blood	*Trichosporon asahii*		AM-B	From AM-B to VOR, central line removed	Died
8	52	Female	ALL	Blood	*Geotrichum capitatum*	FLC, ITR	CAS	Central line removed	Survived

Conclusions: Candida albicans is still dominant in hematological patients following by other non-albican Candida species that cause to fatal outcome in patients with history of azole exposure. Design and equipments of hematology ward are very important for environmental contamination by Aspergillus spp. that cause to mortal and common invasive fungal infections in patient with hematological malignancies. Catheter should be removed in case with fungal blood

stream infection due to the fact treatment response, colonization and outcomes are likely to be related with it.