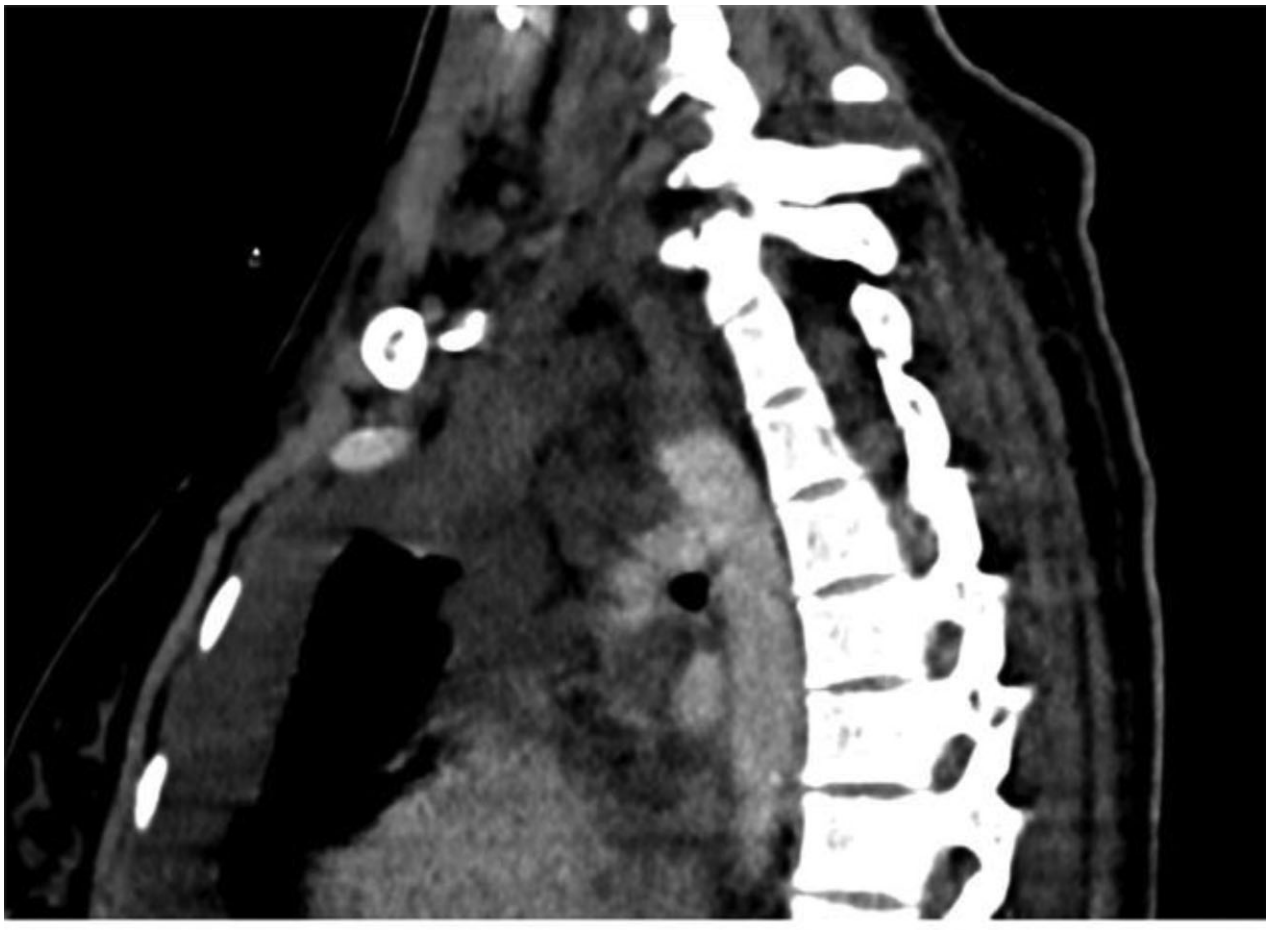

Figure 2. Thrombosis of the subclavian artery due to fungal angioinvasion in a neutropenic patient

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COVID-19-associated pulmonary aspergillosis: Species distribution and susceptibility profiles

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Objectives: This study aimed to investigate the species distribution and susceptibility profiles of *Aspergillus* species isolated from patients admitted to the intensive care unit with severe COVID-19 in Isfahan, Iran, between April 2021 and March 2022.

Methods: This retrospective study included intubated patients with COVID-19 in three referral COVID-19 hospitals. Tracheal aspirate (TA) samples were taken from 267 patients to investigate pulmonary co-infections. COVID-19-associated aspergillosis (CAPA) was defined according to the 2020 European Confederation of Medical Mycology/International Society of Human and Animal Mycosis consensus criteria. *Aspergillus* species obtained from samples were characterized based on conventional and molecular assays. *In vitro* antifungal susceptibility testing was performed on the obtained isolates according to the guidelines from the Clinical and Laboratory Standards Institute.

Results: The mean age of the patients was 61.73 ± 12.69 years. The mean length of hospitalization and admission in ICU were 18.77 ± 12.94 and 13.51 ± 9.83 days, respectively. A total of 61 (22.9%) patients presented with a single cavity lesion. Pulmonary artery pseudoaneurysm was seen in seven patients and post-COVID-19 changes were seen in all patients. Based on the conventional and molecular techniques, 72 isolates of *Aspergillus* species (26.9%), including *A. flavus* (10.1%%), A. *fumigatus* (8.6%%), *A. niger* (3.3%), *A. tubingensis* (2.9%), *A. terreus* (1.1%), *A. luchuensis* (0.37%) *A. quadrillineatus*, and (0.37%), were obtained from 267 patients. MIC results showed that all *Aspergillus* species were susceptible to all tested antifungal drugs.

Conclusion: Access to priority clinical groups, improving the care of patients with simultaneous pulmonary aspergillosis with COVID-19, and identifying *Aspergillus* species are essential steps in the care cascade to manage those affected by them.

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Diagnostic value of *Candida* coloni zation index and serum *Candida mannan* antigen for candidemia in febrile episodes of pediatric lymphoreticular malignancies

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Objective: To evaluate the diagnostic performance of *Candida* colonization index and serum *Candida mannan* antigen predicting candidemia in febrile episodes of pediatric lymphoreticular malignancies

Methods: It was a prospective observational study done for 18 months, from November 2018 to April 2020 at the pediatric oncology unit of a multispecialty tertiary care center. Based on our patient load, duration of the proposed study, and available resources, a sample size of 49 ($n = 49$) was decided and 100 febrile episodes in children with lymphoreticular malignancy were studied. Children below 12 years, receiving chemotherapy for hematological malignancy having oral or axillary temperature >38.3˚C for >1 h were included in this study. Children receiving the antifungal treatment in last 7 days were excluded from the study. Blood collected on day1 and day4 was cultured in BACTEC-9120. For colonization, swabs and samples were collected and cultured on SDA on day1, day4, and day8. All *Candida* isolates were subcultured on SDA and subjected to Gram's stain, germ tube test followed by Microscan identification. DNA sequencing followed by phylogenetic analysis was done for all the isolates of *Candida* recovered from blood. Antifungal susceptibility of yeast stains was done. Serum collected on day1 was used for *C. mannan* antigen detection using ELISA system.

Results: Prevalence of candidemia was 5%. Non-*albicans Candida* spp were isolated from blood cultures on day 4. *Candida* colonization decreased from day1 to day8. Colonization index (CI) day1 showed 80% sensitivity 98.9% specificity, and 98.9% negative predictive value. Significant colonization (CI ≥0.5) was seen in a larger proportion of cases that developed candidemia. There was a significant association of *Candida* colonization (CI ≥0.5) with occurrence of candidemia on day1 and day4. A total of 4 (80%) of candidemia episodes were positive for serum mannan antigen while 1 (20%) was negative. Mannan antigen was detected earlier with 80% sensitivity, 92.6% specificity, and 98.9% negative predictive value. All *Candida* isolates were sensitive to fluconazole, amphotericin-B, and caspofungin.

Receiver operator characteristic curves for diagnostic performance of various parameters in predicting candidemia show the following trends:

- Best parameter in terms of AUROC is the CI (Day 1).
- Best parameters in terms of sensitivity are the CI (Day 1), CI (Day 4), and mannan antigen level.
- Best parameter in terms of specificity is the CI (Day 8).
- Best parameter in terms of positive predictive value is the CI (Day 1).
- Best parameters in terms of negative predictive value are the CI (Day 1), CI (Day 4), and mannan antigen level.
- Best parameters in terms of diagnostic accuracy are the CI (Day 1), CI (Day 8).

Conclusion: The CI can predict candidemia but the threshold value needs to be explored in pediatric patients with lymphoreticular malignancies. Mannan antigen detection gives early results with a high negative predictive value.