Results: Comparable results were obtained using EUCAST and CLSI methods.

Discussion (MC) 5.4% to terbinafine and voriconazole was observed in 100% of isolates, both C. AR and CAS. On the contrary, a significantly greater difference in terbinafine, econazole, fluconazole, posaconazole, and itraconazole MICS between CAR strains and CAS strains was observed with higher geometric mean (GAM) in CAR (range 4.9-9.3 mg/L) than in CAS (1.3-7.2 mg/L). Strains showed the lowest GMs of 0.4 and 0.25 mg/L in CAS and GMs, respectively. A significant difference of the GMs for all the DMIs tested, except posaconazole, was observed between the isolates harboring a TR34/L98H or TR46/MDR2 mutations (GAM strain 10.84-14.8 mg/L) and those with other CYP51A mutations (GAM strain 1.4-4.6 mg/L). In the CAS showing high DMI MICs, the absence of CYP51A mutations was confirmed, while a synonymous mutation P199F was identified in CAS18B. No mutations in HMG12 were found.

In the induction test, the prolonged exposure showed induced phenotypic resistance of 100% (13/13 isolates) with posaconazole, of 72.7% (9/12) for terbinafine and voriconazole, and of 91.1% (10/11) for itraconazole. Molecular analysis to understand if the phenotypic resistance corresponds to induced mutations in CYP51A, CYP51B, and HMG12 genes is in progress.

Conclusion: Preliminary results confirm cross-resistance between clinical azoles and DMIs, with MIC differences between CAR and CAS and between strains with different mutations in the CYP51A gene. Furthermore, the ability of DMIs to induce resistance in vitro was highlighted.

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Study of magnitude and risk factors in patients with candidiasis at a tertiary care hospital with speculation and antifungal susceptibility of pathogenic Candida isolates.

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Objectives: Noncandidal candidiasis is associated with a mortality rate of over 40%, while the attributable mortality rate is 48%. The present study was to determine the magnitude and risk factors in patients with candidiasis at a tertiary care hospital with speculation and antifungal susceptibility of pathogenic Candida isolates.

Methods: The present study was a prospective, cross-sectional, observational study, conducted at a tertiary care hospital for a period of 10 months. The study was conducted after the institutional audit of 100 patients of all age groups, admitted to hospital for ±8 h and diagnosed as proven Candidiasis with isolation of Candida species from at least two blood culture samples or from a clinically significant single blood culture sample. A thorough history and clinical characteristics of each patient was noted. Blood was collected and processed as per standard protocol. Pathogenic Candida species were identified and their antifungal susceptibility testing was performed by disk diffusion method as per the standard method. The antifungal drugs used were fluconazole (25 μg), itraconazole (10 μg), voriconazole (1 μg), and amphotericin B (100 μg). Results were analyzed statistically using SPSS statistics 20.

Results: Candida species were isolated in the pathogen in 24/109 (16%) of clinically suspected cases of candidiasis. Candida species were isolated non-albicans Candida (NAC) species, mainly C. glabrata (22/614 (8.85%) followed by C. parapsilosis (6/33.33%), and C. tropicalis (5/22.61%). C. glabrata was isolated as the pathogen, predominantly in patients of age group 0-10 years (3/104.32%). Majority of Candida species were isolated from patients who had prolonged ICU stay. Among 24 patients of proven candidiasis, 2 (13.33%) patients were from NICU, 10 (41.6%) from PICU, and 12 (50%) from MICU.

Details of the most significant Candida isolates are shown in Table. The presence of Candida species to antimycotics showed that C. glabrata showed 100% resistance to fluconazole, 64.3% to itraconazole, and 45.4% to voriconazole. C. tropicalis showed 80% resistance to fluconazole, 46% to itraconazole, and 40% to voriconazole. C. parapsilosis showed 92.3% resistance to fluconazole, 62.5% to itraconazole, and 57.5% to voriconazole. All three isolated pathogenic Candida species showed 100% susceptibility to anidulafungin. Mortality observed in present study was 72.4% (29/39). A total of 57 patients were from ICU.

Conclusion: Non-albicans Candida (NAC) species, mainly C. glabrata, C. parapsilosis, and C. tropicalis were the causative agent of candidosis, went over to prolonged stay in ICU. Infections caused by Candida species result in a significant problem in ICUs. An increase in resistance to azoles is a challenge to its empirical and prophylactic use. This underscores the usage of antifungal, only on the basis of antifungal susceptibility patterns of the pathogenic isolates.
Identification, clinical profile, antifungal susceptibility pattern of Candida auris from a tertiary care center in India

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Objectives:
To identify the phenotypic characteristics of Candida auris.
To analyze the clinical profile of Candida auris infection.
To describe the antifungal susceptibility pattern of Candida auris.

Methods:
The study was conducted in the Department of Microbiology in Mycology division at Sri Ramachandra Institute of Higher Education and Research from December 2019 to November 2021. The study protocol was approved by Institutional Ethics Committee.

Candida species isolated from various specimens sent to the laboratory were identified by matrix-assisted laser desorption-ionization Time-of-Flight mass spectrometry (MALDI-TOF). The growth characteristics of C. auris were investigated on various media including Selective Auris Medium (SAM), H2O broth agar Candida and Tetradsbaum reduction agar.

Antifungal susceptibility testing was performed by using the Clinical and Laboratory Standards Institute broth microdilution method M27-A3. Antifungal agents tested were fluconazole, itraconazole, caspofungin, voriconazole, amphotericin, micafungin, caspofungin and amphotericin B. Candida albicans American Type Culture Collection (ATCC) 29233 was used as quality control strain.

Results:
A total of 37 C. auris isolates were collected. Both adult and pediatric cases were included. The majority (23.7%) of the C. auris cases were seen in the age group of 15-64. Median age was 54 years for the adults. Among the 7 children, 6 were neonates and 1 was an infant. The most common source of isolation was urine and blood.

A total of 35/37 isolates showed moderate to heavy growth on the SAC, while 2 isolates showed mild growth after 72 h. But all the other Candida species and other yeast tested were inhibited on this medium. All the isolates of C. auris grew as cream to pinkish purple colonies on Rhodamine agar. Candida on Tetradsbaum reduction agar, all of them formed maroon colonies.

The average duration of hospital stay was 25 days (range 4-63). A total of 35 of the patients were admitted to ICU. 8 had undergone mechanical ventilation and intensive. Central venous catheter was inserted in 9 patients and post-operative catheter placed in 4 patients. 4 patients had undergone tracheotomy and 25 of them had undergone some other invasive procedures. Total parental nutrition was received by 3 patients, 16 were diabetic and 11 were hypertensive. Prior antifungal exposure was present in 9 patients and 26 had received broad-spectrum antibiotics.

The crude mortality rate with C. auris infection in patients was 32.43% and the attributable mortality rate, as considered by the treating physician was 10.41%.

Antifungal resistance was noted to be amphotericin B (n = 15, 40.5%), fluconazole (n = 10, 27.0%), voriconazole (n = 4, 10.81%), caspofungin (n = 6, 16.22%), posaconazole (n = 4, 11.11%), itraconazole (n = 4, 11.11%). Multidrug resistance was noted in 15 (40.54%) isolates and 3 isolates (8.14%) were resistant to a drug from all three groups.

Conclusions: C. auris poses a great threat to immunocompromised individuals and those admitted in ICUs for long term.

Amphotericin B in pediatrics: analysis by age stratification suggests a greater chance of adverse events from 13-month of age onward

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Background: Desensibilization amphotericin B (D-AMB) remains an antifungal of great therapeutic value in pediatrics. It is generally accepted that its use in neonates is safer than in older children. However, childhood presents different periods of development which deserves to be evaluated more precisely. Our goal was to assess the usage profile of D-AMB in stratified pediatric age groups, adapted according to the National Institutes of Child Health and Human Development (NICHD) classification.

Methods: We conducted a retrospective cross-sectional observational study at a Brazilian tertiary children’s hospital. Non-parametric tests were applied, such as the chi-square test to compute proportions and Fisher’s exact test to assess the association between categorical variables or in contingency tables.

Results: A total of 127 medical records were stratified as patients neonatal (birth <37 weeks postmenstrual age), term neonatal (birth ≥27 days), infants (28 days-12 months), toddler (≥13 months-2 years), early childhood (3-5 years), middle childhood (6-11 years) and early adolescence (12-18 years). Very few acute infection-related side effects were observed during administration of D-AMB in pediatrics. We found an unfavorable impact of D-AMB from 15 months onward, suggesting this group as a turning point for a greater chance of adverse events, and test were performed after the neonatal period as it is conventionally known (Fig 1).

Conclusions: Clinical or observational studies based on age stratification are essential to precisely elucidate whether drugs with toxicity potential can be used safely in the pediatric population. Searching for a turning point has been shown to contribute to the accuracy of the study, while providing more substantial information on the impact of D-AMB on different pediatric age groups.