Introduction

- Candida auris has spread through healthcare systems worldwide, and is associated with resistance to multiple antifungal drugs, invasive infections and high case fatality rates.
- Infections with Clade 4 were first identified in Israel in 2014. A significant increase in cases was observed in 2021.
- We report on laboratory-based surveillance of C. auris infections in Israel.

Methods

- Study population: All patients with C. auris isolates from all Israeli hospitals and long-term care facilities between January 2014 and November 2021.
- Isolates suspected as C. auris were sent to the national reference mycology laboratory at the Tel Aviv Medical Center.
- Species-level identification was done using internal transcribed spacer (ITS) PCR and sequencing.
- Antifungal drug susceptibility testing was performed using broth microdilution according to CLSI methodology.
- Multilocus sequence typing (MLST) was performed using 4 housekeeping genes (ITS, LSU, RPB1 and RPB2). Sequences were concatenated and aligned using MUSCLE, and a phylogenetic tree was constructed with the neighbor joining method and 2000 bootstrap replications.
- Clinical data was recovered retrospectively from the patients’ medical records.

Results

- A total of 111 patient-specific C. auris isolates were identified in Israel between January 2014 and November 2021.
- Of these, 94 (84.6%) patient-isolates were identified in 2021, a 38.7-fold increase over the previous annual incidence (Fig.1).
- Clinical data were collected on 111 patients (Table 1). 58 (50.5%) were clinical isolates and 55 (49.5%) screening isolates.
- 19 bloodstream isolates were identified, 10 of them in 2021.
- 37 (33.6%) patients were hospitalized with COVID19.
- Median time from COVID19 diagnosis to recovery of C. auris was 26 days.
- Drug resistant bacterial organisms were recovered from 59 (53%) patients (Fig.3).
- Only 12% of patients with C. auris were previously exposed to antifungal drugs.
- Of isolates collected in 2021, 77/94 (82%) originated in 3 hospitals (A, B and C). In all 3 hospitals, cases were first associated with COVID19 units, and subsequently were identified in other units.
- MLST was performed on 31 isolates. Clade 4 predominated from 2014 through 2020 (15/16 isolates). In contrast, in 2021, 9 of 15 isolates (60%), all from hospital A, were identified as clade 3, 2 isolates (13.3%), both from hospital B, were clade 1, and 4 isolates (26.6%) were clade 4 (Fig.2).
- Isolates from clade 3 had higher mean MIC of fluconazole, itraconazole, voriconazole, and posaconazole, and lower mean MIC of amphotericin B compared to isolates from clade 4 (Fig.4).
- The crude hospital mortality rate was 33.3% (37/111).

Conclusions

- There is an ongoing multihospital outbreak of C. auris infections in Israel.
- Identification of distinct C. auris clades in different hospitals suggests multiple importation events into the country, and accelerated spread driven by infection control deficiencies at COVID19 units.
- Urgent implementation of infection control measures across healthcare facilities is required.