Epidemiology and Outcomes of Candidemia in a Large Academic Medical Center

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BACKGROUND

- Candidemia is an important cause of morbidity and mortality in community and hospital-onset infections, accounting for ~10% of all blood stream infections (BSI) in the hospital, with mortality reaching 50%.
- Changes to national practice guidelines recommend empiric echinocandin usage in patients with candidemia. (2016 IDSA update)
- The superiority of echinocandins to azole therapy has been debated with special consideration to its inability to achieve therapeutic ocular concentrations.
- We sought to characterize the epidemiology and outcomes of candidemia at our center with special attention to the impact of azole susceptibility on mortality

STUDY DESIGN & METHODS

- This retrospective, observational cohort study was conducted at the University of Maryland Medical Center in Baltimore, MD, USA
- All hospitalized adult patients (≥18 years old) with positive blood cultures for *Candida spp.* between July 1, 2017 to December 31, 2021 were included.
- Definitions
  - Azole-susceptible organisms(*Candida spp.* ≥ 94% susceptible on institutional antibiogram: *C. albicans, C. parapsilosis, C. tropicalis, C. dubliensis)*
  - Azole non-susceptible organisms (*Candida spp.* <94% susceptible on institutional antibiogram: *C. glabrata, C. krusei, C. auris)*
- Primary outcome was 30-day crude mortality
- Secondary outcomes
  - Recurrent/persistent candidemia
  - 90-day mortality
  - Length of stay
- Analysis:
  - Comparisons of factors associated with azole-susceptible vs. non-susceptible organisms were performed with χ^2 or Wilcoxon rank sum tests
  - The association of azole non-susceptible candidemia with 30-day mortality was determined with use of logistic regression analysis
    - Subgroup analysis was done for *C. krusei* vs non *C. krusei*

Take-home Points:

- **Azole non-susceptible candidemia is an increasingly prevalent and highly morbid infection**
- **Since widespread use of empiric echinocandin therapy for candidemia, mortality from azole-susceptible and non-susceptible *Candida spp.* was similar, due to adequate coverage of these species**
- **A disproportionately high mortality in *C. krusei* candidemia was observed**
- **Although echinocandins may offer a mortality benefit in candidemia, attention to inadvertent consequences of this practice (i.e. concerns for lack of coverage of ocular complications or *C. parapsilosis* infections, overuse/resistance) should be investigated**

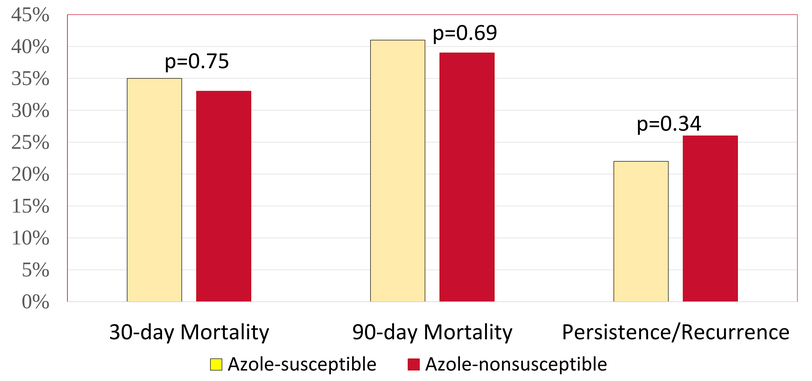
RESULTS

Baseline Demographics and Clinical Characteristics

		Total (n=404)	Azole-susp (n= 292)	Azole-non-susp (n=112)	p-value
Age (median, IQR)		55 (40-66)	55 (39-66)	55 (42.5-65.5)	0.89
Location, n (%)					0.17
	Medicine	43 (11)	34 (11)	9 (8)	
	Oncology	25 (6)	20 (7)	5 (5)	
	Transplant	14 (4)	8 (3)	6 (5)	
	Surgery	40 (7)	25 (9)	5 (5)	
	MICU	119 (30)	84 (29)	35 (31)	
	SICU	86 (21)	55 (19)	31 (28)	
	Trauma	52 (13)	37 (13)	15 (14)	
	ED	35 (9)	29 (10)	6 (5)	
Critically ill, n (%)		205 (51)	139 (48)	66 (59)	0.04
Hospital-onset, n (%)		305 (76)	218 (75)	87 (78)	0.52
Admission to candidemia (days, median, IQR)		10.6 (2.2-22.9)	10.2 (2-23)	11.9 (3-23)	0.6

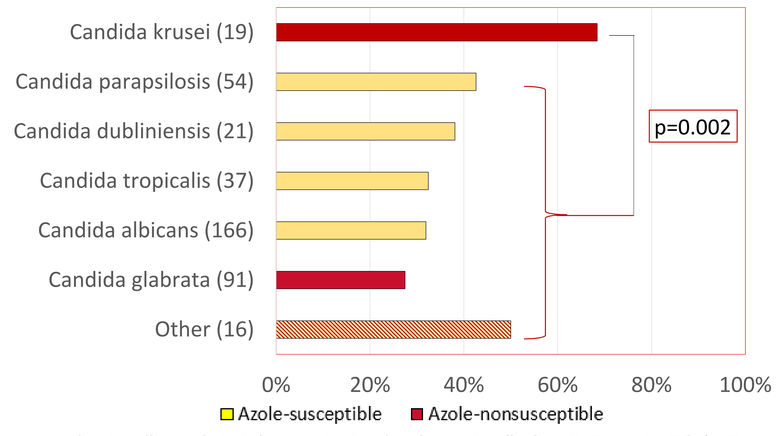
- 404 candidemia episodes for 389 patients were evaluated, 72% of which were azole-susceptible
- There was no significant difference in distribution by location, Critically ill patients (MICU+SICU) were more likely to have azole-non-susceptible spp. (p=0.04)
- *C. albicans* remains the most common species (41%, 166), followed by *C. glabrata* (23%, 91), *C. parapsilosis* (13%, 54) and *C. tropicalis* (9%, 37)

Outcomes by Azole-susceptibility



- There were no differences in outcomes, including length of stay, between azole-susceptible vs. non- azole susceptible species (30 vs 32.5 days, p=0.3)
- High mortality (68%) was seen with *C. krusei* species (68%)
- After adjusting for age, hospital-onset and critical illness, 30-day mortality for:
  - Azole-non-susceptible vs susceptible had OR of 1.4 (95% 0.8-2.3, p=0.2) with no change when stratified to critical illness [OR 1.5 (95% CI 0.87 – 2.7 p=0.13]
  - *C. krusei* vs non *C. krusei* had an OR 4.8 (95% CI 1.6-14, p=0.006) with increase of OR to 9.5 (1.2-75 95% CI, p=0.03) when stratified to critical illness

Mortality Rate by Species (n=404)



Other: C. guilliermondi (3), C. lusitaniae (6), C. orthopsilosi (2), C. pelliculosa (2), C. auris (2), C. kefyr (2)