

MICAFUNGIN RESISTANT CANDIDA IN A PRIVATE HOSPITAL

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Background

Micafungin belong to echinocandins, which is recommended as the first line therapy for patients with invasive candidiasis. Antifungal therapy is a critical component of patient care, but therapeutic choices are limited due to few drug classes. Resistance to echinocandin-class drugs remains relatively low (<3%), nevertheless there has been an increase in echinocandin resistance reported from several regions. In Indonesia, micafungin is relatively newest antifungal drugs, thus there was very limited published data of micafungin resistant. The aim of this study was to observe the prevalence of micafungin resistant in *Candida* spp isolates of inpatient subjects.

Methods

This observational descriptive study was conducted at Bandung Adventist Hospital, West Java Indonesia from Januari 2019 to June 2020. All specimens obtained from undiagnosed candidiasis patient at any wards in the hospital. The colony was picked up from various primary media and then stained by Gram and KOH for detection of hyphae or spores, then subculture into Sabouraud's Dextrose Agar media. *Candida*'s species identification and susceptibility to antifungal were done using Mindray TDR 300B and TDR X060.



Results

During the study, 203 *Candida* spp were isolated but only 90 isolates with micafungin susceptibility data. Most specimens were sputum (74.5%), followed by urine (15.6%), blood (5.6%), pus swab (2.2%), vaginal swab and others (1.1%) each as presented in Figure 1.

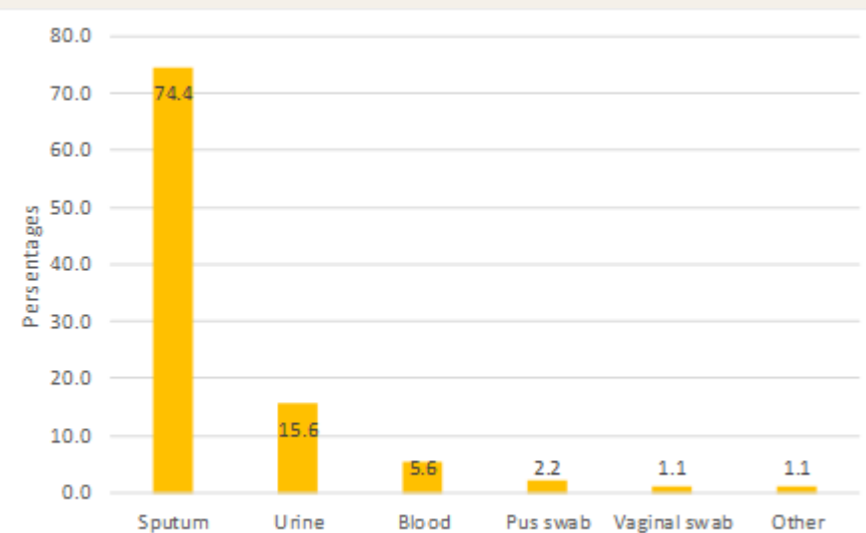


Figure 1: Types of specimens

Results

The most prevalent of *Candida* species were *C. albicans* as illustrated in Figure 2 below.

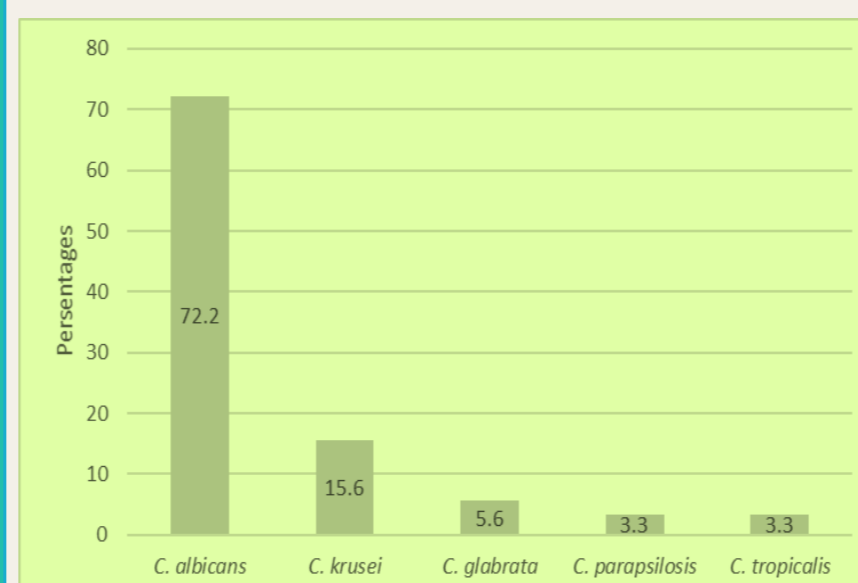


Figure 2: *Candida* species of isolates

The subject were admitted in intensive care (48%) and non intensive ward (42%).

Ten isolates (11.1 %) were resistant to micafungin as presented in Figure 3.

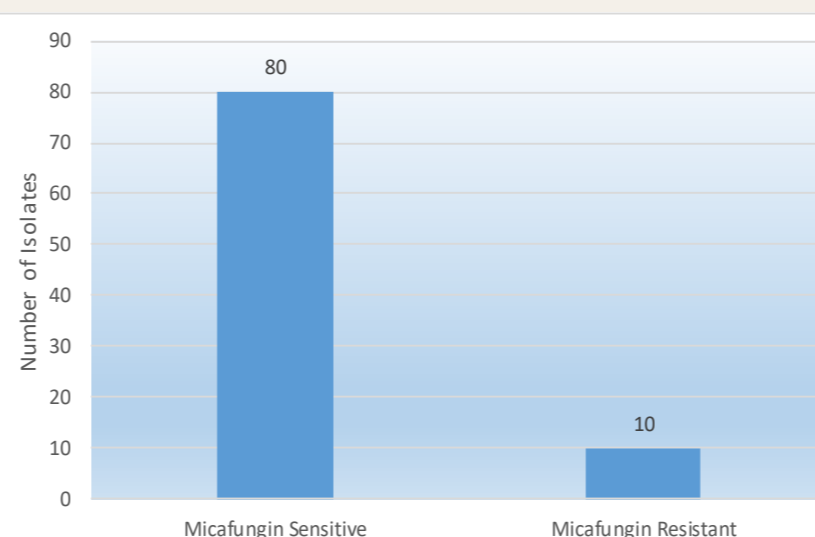


Figure 3. Number of Micafungin Resistant Isolates

Candida albicans represents the most frequent cause of invasive candidiasis, but a progressive epidemiological shift towards more resistant non-*albicans Candida* spp is reported all over the world just like the result of this study (Figure 4).

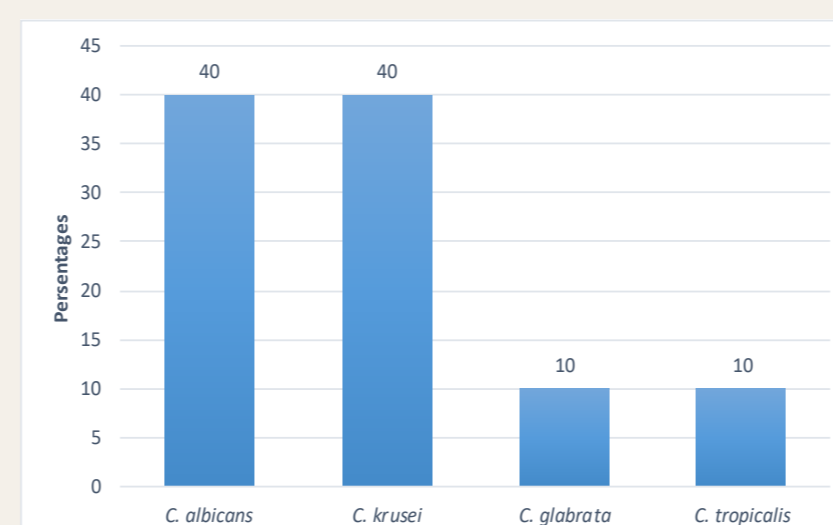


Figure 4. Susceptibility to Micafungin Based on *Candida*'s species

Six subjects are from age over 70 years old and 20% were infant. Immunocompromised critically ill patients constitute a population with the high risk of candidemia as seen in this result.

The clinical characteristic of patients infected by Micafungin Resistant *Candida* species is illustrated in Table 1.

Results

Table 1. Clinical Characteristic of Micafungin Resistant *Candida*

No.	Specimen	<i>Candida</i> species	Sex	Age	Room	Diagnosis	LoS
1	Blood	<i>C. tropicalis</i>	F	22 days	NICU	Premature, Low birth weight, Respiratory failure	23 days
2	Sputum	<i>C. albicans</i>	F	79 years	Medical	Pneumonia, Congestive Heart Failure	12 days
3	Blood	<i>C. krusei</i>	F	85 years	Medical	Ileus obstructive, Tumor metastase	17 days
4	Sputum	<i>C. krusei</i>	F	82 years	ICU	Glioma, DM, Pneumonia	14 days
5	Sputum	<i>C. glabrata</i>	F	89 years	HCU	Sepsis, Stroke, Coronary Arterial Disease	17 days
6	Sputum	<i>C. albicans</i>	F	86 years	Medical	Pneumonia, Chronic Obstructive Pulmonary Disease	7 days
7	Urine	<i>C. albicans</i>	F	51 years	Medical	Acute cystitis, Congestive Heart Failure	8 days
8	Sputum	<i>C. krusei</i>	M	75 years	Medical	Pneumonia, Sepsis	24 days
9	Blood	<i>C. albicans</i>	M	56 days	NICU	Premature, Low birth weight, Respiratory failure	65 days
10	Sputum	<i>C. krusei</i>	M	66 years	Medical	Coronary Arterial Disease, Pneumonia	6 days

Conclusion

This study showed a high resistance of *Candida* to echinocandin-class drugs than other studies. There was a concerning result of Micafungin Resistant *Candida* at Bandung Adventist Hospital which can be a caution for clinicians in using micafungin. Further study is needed as very rare research of antifungal resistance compare to antibiotic resistance.

References

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