



Serious fungal infection in Northwestern Greece, during a five year period.

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BACKGROUND

- The incidence of **severe fungal infections** has increased worldwide and represents a serious threat, especially
 - among **immunocompromised and critically ill patients**.
- The **aim of this study** was
 - to assess *Candida* rates,
 - species involved and sensitivity profile to antifungals as well as
 - the *incidence of other yeasts of clinical importance*, during the last 5 years (2011-2015).
- The results regarding **candidaemia**, were also compared with these of a previous retrospective analysis (decade 2001-2010).

MATERIALS/METHODS I

A retrospective study of

- Candida* blood stream episodes
- cryptococcal infections and
- invasive aspergillosis
- collected from the microbiology database of the **750-bed University Hospital of Ioannina**, including 5 intensive care units (ICUs), 25 medical and 16 surgical wards, over a 5-year period, was carried out.

- Data regarding *demographic characteristics* and *clinical risk factors* were collected from the patient's **medical records**.

MATERIALS/METHODS II

- Isolation and identification** of the respective etiological agents was achieved using
 - the standard microbiological techniques,
 - BacT/Alert automated system, Vitek 2 system and
 - API32C (bioMerieux, France).
- Antifungal susceptibility** of *Candida* strains was determined using Vitek 2 system complemented with E-test (bioMerieux), according to CLSI criteria.
- Detection of galactomannan antigen** was performed using the Platelia Aspergillus enzyme immunoassay (Bio-Rad, Hercules, CA).

RESULTS I

- Out of **1946 blood stream infections (BSIs)**, a total of **89 episodes of candidemia** were identified, indicating an isolation rate of **4.6%** and **91 strains** were recovered.
- The overall **incidence rate** was **0.30 episodes/1000 hospital admissions**.
- Forty-seven per cent** of patients were **older than 65 years**, while among **78 adults**, 46 were males (**59%**).
- BSIs due to *Candida* sp. were **more prevalent among non-ICUs (62%)** than ICU settings (38%) (**figure 1**).
- Predominant risk factors included the use of broad-spectrum antibiotics (98.5%), central venous (96.8%) and urinary catheterization (97%).
- Twenty patients (**23%**) had **solid organ tumor** and 10 (**11.2%**) **hematologic malignancy**.



Figure 1. Distribution of BSIs due to *Candida* sp. by ward

RESULTS II

- Candida albicans* was the commonest species representing **56.1%** of all isolates (51/91), followed by *C. parapsilosis* (20.9%-19/91), *C. glabrata* (9.9%-9/91), *C. lusitanae* (7.7%-7/91) as well as other **non-albicans** species (5.5%-5/91) (**figure 2**).
- The **overall mortality** was **49.4%** (44/89 episodes), caused mainly by *C. albicans* (61.4%-27/44 deaths).

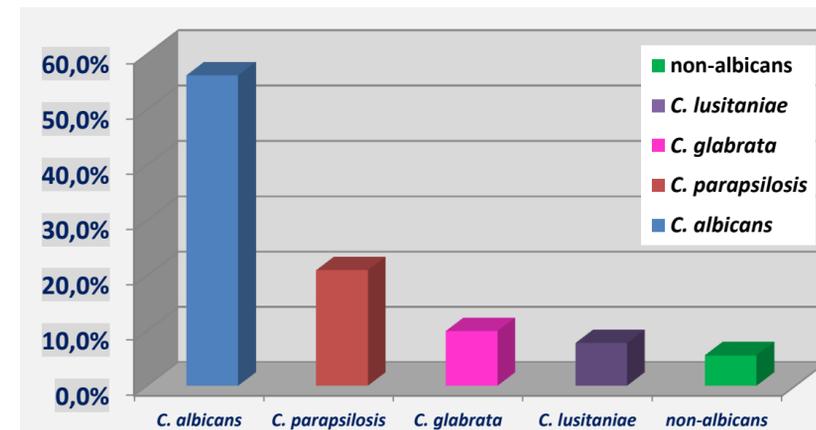


Figure 2. Distribution of *Candida* isolates by species

RESULTS III

- In terms of **in vitro susceptibility**, all isolates were **susceptible to amphotericin B**, except primary resistant strains of *C. lusitanae*.
- Four strains (**44%**) *C. glabrata* were resistant to **fluconazole** as well as 2 *C. parapsilosis* (**11%**).
- Resistance to **casposfungin and micafungin** exhibited **47%** and **10.5%** of *C. parapsilosis* isolates, respectively. (**Figure 3, Table 1**).

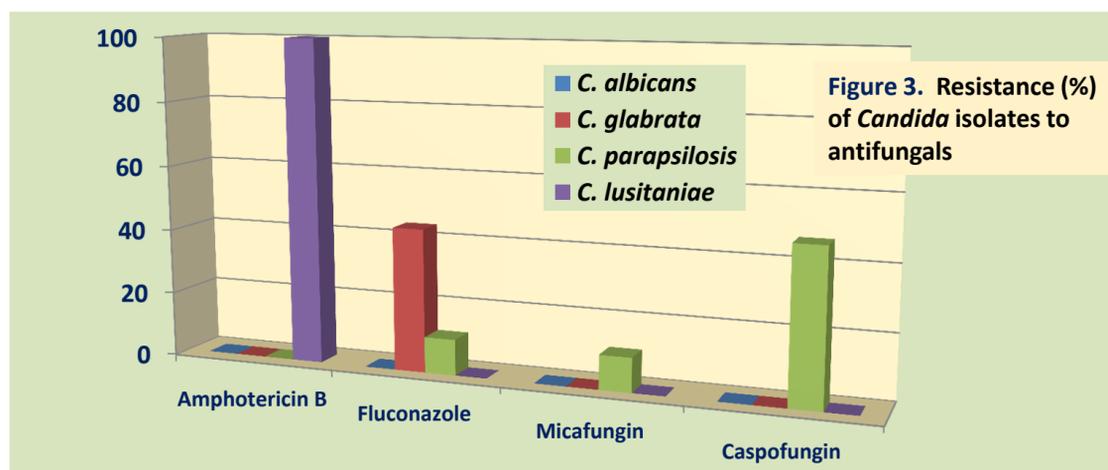


Figure 3. Resistance (%) of *Candida* isolates to antifungals

Antifungals	<i>C. albicans</i>	<i>C. glabrata</i>	<i>C. parapsilosis</i>	<i>C. lusitanae</i>
Amphotericin B	0	0	0	100
Fluconazole	0	44	11	0
Micafungin	0	0	10,5	0
Caspofungin	0	0	47	0

Table 1. Resistance (%) of *Candida* isolates to antifungals

- During the study period, **15 different cases of invasive pulmonary aspergillosis** were also estimated concerning mainly patients with solid organ tumors (67%) and resulting in 2 deaths (**12.5%**).
- Only **one episode of cryptococcal BSI and meningitis** was recorded with fatal outcome and **none with *P. jirovecii* pneumonia**.

CONCLUSION

- C. albicans* is still the most frequent species causing candidaemia. Amphotericin B retains a 100% sensitivity rate for *Candida* isolates.
- The incidence of other severe fungal infections remains low probably due to widespread use of antifungals for prophylaxis.
- Continuous surveillance** is mandatory to ensure an early appropriate targeted treatment which is crucial for the successful approach to severe fungal infections.

REFERENCES

- Barchiesi F et al. Infection 2015 (Epub ahead of print).
- Bassetti M and Righi E. Semin Respir Crit Care Med. 2015; 36(5) 796-806.

- The **incidence of candidaemia** and the **distribution of species** were **approximately the same**, in comparison with the previous study.
- There weren't remarkable changes regarding resistance**.