

Scedosporium/Pseudallescheria isolates from a Spanish teaching hospital: incidence, molecular identification and antifungal susceptibility

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Introduction

- There are still limited data about the rate at which the different strains of *Scedosporium/Pseudallescheria* species complex are recovered from patients and of their clinical significance.
- Also, the use of molecular tools has led to the description of new species of this fungal group in recent years.
- The aim of this study was to determine the species of *Scedosporium/Pseudallescheria* isolates present in our institution and their antifungal susceptibility.

Materials and Methods

- 96 clinical isolates of *Scedosporium* spp were identified from 47 patients hospitalized at our institution from January 1st, 1996 to December 31st, 2012.
- Patient charts were reviewed for clinical data, and cases were classified as proven, probable, or possible invasive fungal infection (IFI) according to the consensus criteria of the European Organization for Research and Treatment of Cancer/Invasive Fungal Infections Cooperative Group and the National Institute of Allergy and Infectious Diseases Mycoses Study Group.
- Fungal isolates were identified to the species level by partially amplifying and sequencing the β -tubulin (*benA*) gene, using primers Bt2a and Bt2b.
- Susceptibility to amphotericin B (AMB), itraconazole (ITZ), posaconazole (POS), voriconazole (VCZ), terbinafine (TRB), anidulafungin (AND), caspofungin (CAS) and micafungin (MYC) was evaluated by the CLSI M38-A2 broth microdilution method

Fig. 1.- Species distribution of *Scedosporium/Pseudallescheria* isolates

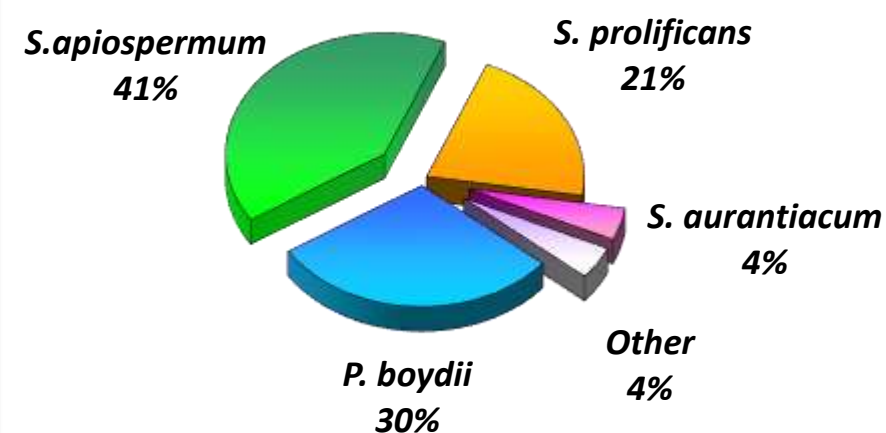


Fig. 2.- Site of isolation of clinical *Scedosporium/Pseudallescheria* isolates

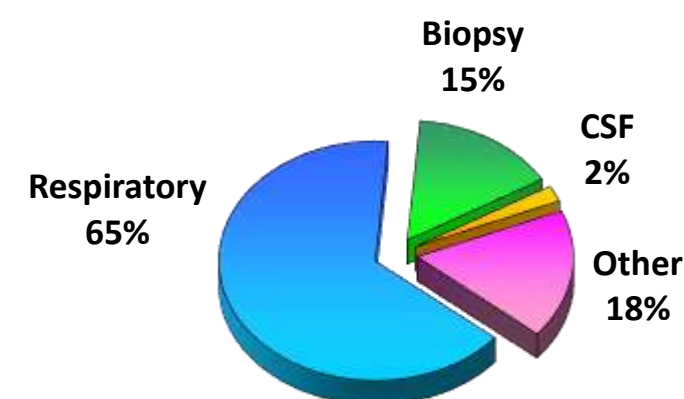
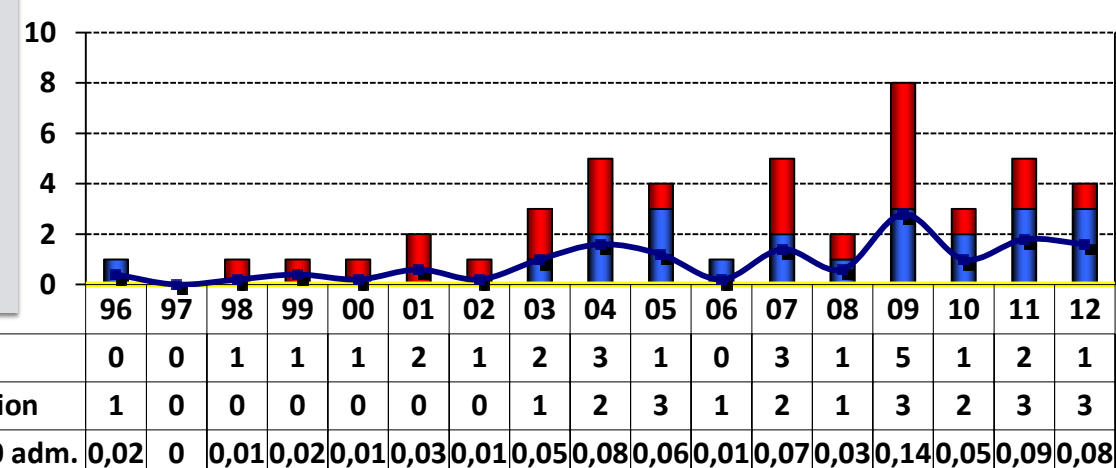


Fig. 3.- Evolution in the number of clinical cases of colonisation or invasive infection caused by *Scedosporium/Pseudallescheria* isolates per 1,000 admissions



Results

- In 25 patients (53.2%), the isolation of *Scedosporium/Pseudallescheria* spp. was classified as invasive infection, according to the EORTC/MSG criteria; and 22 patients (46.8%) were considered as colonisation.
- Six different species belonging to this species complex were identified, namely *P. boydii*, *P. ellipsoidea*, *P. minutispora*, *S. apiospermum*, *S. aurantiacum* and *S. prolificans*.
- *S. apiospermum* was isolated from 19 patients (40.4%), being thus identified as the prevailing species. *P. boydii* and *S. prolificans* were the second and third most common species (29.8% and 21.3% of patients, respectively), while *S. aurantiacum* (4.3%), *P. ellipsoidea* (2.1%) and *P. minutispora* (2.1%) were only recovered from a minority of patients.
- Most cases of invasive disease were caused by *S. apiospermum* (10/25, 40.0%), *S. prolificans* (8/25, 32.0%) and *P. boydii* (6/25, 24%).

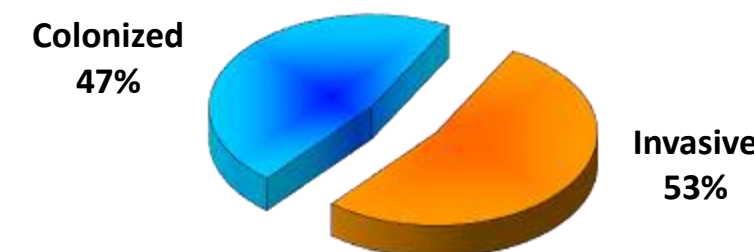


Fig. 4.- Percentage of clinical cases of colonisation or invasive infection caused by *Scedosporium/Pseudallescheria* isolates.

- In general, and regardless of the species, the in vitro activity of amphotericin B, terbinafine and echinocandins against most isolates was very limited.
- However, important inter-species variability was detected for triazole susceptibility.
- *S. prolificans* isolates showed decreased in vitro susceptibility to itraconazole, posaconazole and voriconazole, with MIC50 and MIC90 values $\geq 16 \mu\text{g}/\text{mL}$ in all cases.
- In contrast, the tested triazoles were significantly more active against isolates from other species of the *Scedosporium/Pseudallescheria* complex.

Conclusions

- More than half of the isolates of *Scedosporium/Pseudallescheria* caused invasive fungal infections.
- *S. apiospermum* and *P. boydii* were the most prevalent species in our cohort study.
- The large majority of the isolates are resistant to the most common antifungal agents.
- Since the *Scedosporium/Pseudallescheria* species complex displays multiple antifungal resistance patterns, the molecular-based methods used to identify down to species level are considered relevant for the choice of the appropriate antifungal treatment.