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Research note

A prospective international *Aspergillus terreus* survey: an EFISG, ISHAM and ECMM joint study

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ABSTRACT

Objectives: A prospective international multicentre surveillance study was conducted to investigate the prevalence and amphotericin B susceptibility of *Aspergillus terreus* species complex infections.
Methods: A total of 370 cases from 21 countries were evaluated.
Results: The overall prevalence of *A. terreus* species complex among the investigated patients with mould-positive cultures was 5.2% (370/7116). Amphotericin B MICs ranged from 0.125 to 32 mg/L, (median 8 mg/L).
Conclusions: *Aspergillus terreus* species complex infections cause a wide spectrum of aspergillosis and the majority of cryptic species display high amphotericin B MICs. **B. Risslegger, Clin Microbiol Infect 2017;23:776.e1–776.e5**

Introduction

Aspergillus terreus species complex holds an exceptional position within the aspergilli, as it appears to be a rare pathogen of infection and displays polyene resistance [1–3]. *Aspergillus terreus* is a common cause of invasive aspergillosis at the M. D. Anderson Cancer Center in Houston, TX, USA, and the University Hospital of Innsbruck, Austria [3–5]. Almost no data are available on how frequently this species occurs elsewhere and whether differences within amphotericin B susceptibility exist. Our objective was to investigate the global prevalence of *A. terreus* species complex in fungal diseases and to survey amphotericin B susceptibility.

Materials and methods

An international surveillance network was established on behalf of the European Fungal Infection Study Group, the International Society for Human and Animal Mycology *Aspergillus terreus* working group, and the European Confederation of Medical Mycology. Thirty-eight centres from 21 countries participated. Each centre collected isolates and reported the number of *A. terreus* and fungal pathogens detected for 12 consecutive months (2014–2015). Patient characteristics, epidemiological data and antifungal treatment were documented through an online questionnaire using the www.clinicalsurveys.net online platform. Patients were classified according to the European Organization for the Research and Treatment of Cancer/Mycoses Study Group consensus definitions [6] by the participating centres. Unless otherwise noted, the isolation of *A. terreus* from sputa of non-neutropenic patients was categorized as colonization. Isolates were sent to the Division of Hygiene and Medical Microbiology for molecular species identification [7,8] and susceptibility testing according to the European Committee on Antimicrobial Susceptibility Testing (EUCAST) method [2]. *Aspergillus terreus* strains were identified to the cryptic species level by sequencing partial β-tubulin and applying a validated in-house database owned by Jos Houbraken, CBS Fungal Biodiversity Centre, Utrecht, the Netherlands. An amphotericin B epidemiological cut-off value of 4 mg/L was set for *A. terreus* [2].

This study was approved by the Ethics Commission of the Medical University of Innsbruck (UN4926).

Results

A total of 461 patients were enrolled, of which 91 were excluded because of insufficient patient documentation ($n = 45$) or lack of fungal isolates ($n = 46$) being available. Consequently, this survey comprises 370 eligible cases with an equal number of corresponding *A. terreus* isolates. Cases were derived from Europe ($n = 261$), followed by Middle East ($n = 70$), India ($n = 19$), South America ($n = 10$) and North America ($n = 10$) (Fig. 1). *Aspergillus terreus* sensu stricto ($n = 315$), *Aspergillus citrinoterreus* ($n = 36$), *Aspergillus alabamensis* ($n = 6$), *Aspergillus hortai* ($n = 10$), *Aspergillus floccosus* ($n = 1$) and *Aspergillus neoafricanus* ($n = 1$) were identified. One isolate (*A. terreus 1214*) was closest to *A. alabamensis* and might represent a new species. Hence, cryptic species accounted for 14.9% (55/370) with *A. citrinoterreus* (36/55, 65.5%) being dominant.

Amphotericin B MICs ranged from 0.125 to 32 mg/L for *A. terreus* sensu stricto; MICs for all cryptic species were consistently higher, ranging from 2 to 32 mg/L (see Table 1). According to the EUCAST