Fungiscope™ – Global Emerging Fungal Infection Registry

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on behalf of **The Fungiscope ECMM/ISHAM Working Group**

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A working group of: ECMM CEMM | ISHAM International Society for Human and Animal Mycology

In cooperation with: The MSG Mycoses Study Group | MYK G | CEII the Czech Leukemia study group for life | AGIHO Infektionen in der Hämatologie und Onkologie, Fachgruppe der DGHO | dgi Deutsche Gesellschaft für Infektiologie | ESCMID | PEG | Paul-Ehrlich-Gesellschaft für Chemotherapie e.V. www.p-e-g.org | ÖGMM | FIMUA Federazione Italiana Micopatologia Umana e Animale

www.fungiscope.net — Fungiscope

Background

The incidence of invasive fungal infections (IFI) is increasing worldwide. While the etiology of this development has not been completely understood, evermore invasive medical care as well as increasing numbers of long-term immunocompromised patients are considered major contributing factors.

A wide variety of so-called “emerging fungi” accounts for a significant proportion of IFI. Data on their epidemiology, pathogen biology and clinical course is scarce, often impeding evidence-guided decision making in the clinical setting.

To overcome these difficulties and eventually improve patient care, Fungiscope™ – Global Emerging Fungal Infection Registry has been created in 2003.

Methods

- ✓ Filing epidemiological and clinical data of patients with emerging fungal infections in an online database
- ✓ Quality control by medical documentation specialist and infectious disease specialists
- ✓ **FungiThek**: Biobanking and reference analysis of cultured isolates and tissue samples, as well as exchange with other centers for research projects
- ✓ **FungiQuest**: A free-of-charge search engine of the Fungiscope database
- ✓ Therapeutic antifungal drug monitoring
- ✓ **Inclusion criteria**: Cultural, histopathological, antigen or molecular biologic evidence of IFI
- ✓ **Exclusion criteria**: Colonization or infections due to *Aspergillus* spp., *Candida* spp., *Cryptococcus neoformans*, *Pneumocystis jiroveci* and any endemic fungal infection
- ✓ The registry is open to everybody wishing to contribute a case of an emerging fungal infection

FungiScope

www.fungiscope.net

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Registration and Password Acquisition
register@fungiscope.net

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Electronic Case Report Form

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Quality Control
Medical documentation specialist and infectious disease specialists

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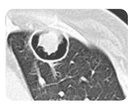
Diagnostics | FungiThek Culture/Biopsy Banking | FungiQuest Database Search | Therapeutic Drug Monitoring | Statistical Analysis

FungiThek

Diagnosis of IFI with rare fungus



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Centralization and storage of isolates

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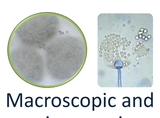
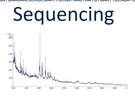
Diagnostics laboratories



Macroscopic and microscopic identification

Sequencing



Mass Spectrometry

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Reference database
Link specimens to clinical and demographic data
Manage requests for specimen use

FungiQuest

Diagnosis of IFI with rare fungus

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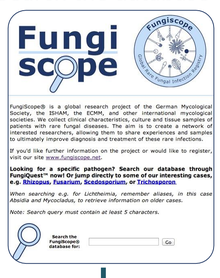
www.fungiquest.net
Search the database



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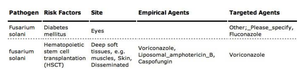
Browse through cases



Pathogen	Risk Factors	Site	Empirical Agents	Targeted Agents
Fusarium solani	Diabetes mellitus	Eyes		Other_, Please_specify, Fluconazole
fusarium solani	Hematopoietic stem cell transplantation (HSCT)	Deep soft tissues, e.g. muscles, Skin, Disseminated	Voriconazole, Liposomal_amphotericin_B, Caspofungin	Voriconazole

Figure 1. Project overview

Results

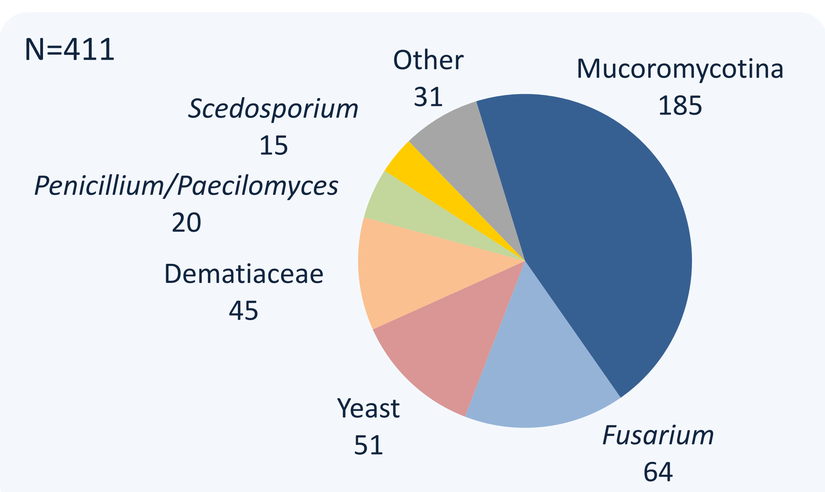
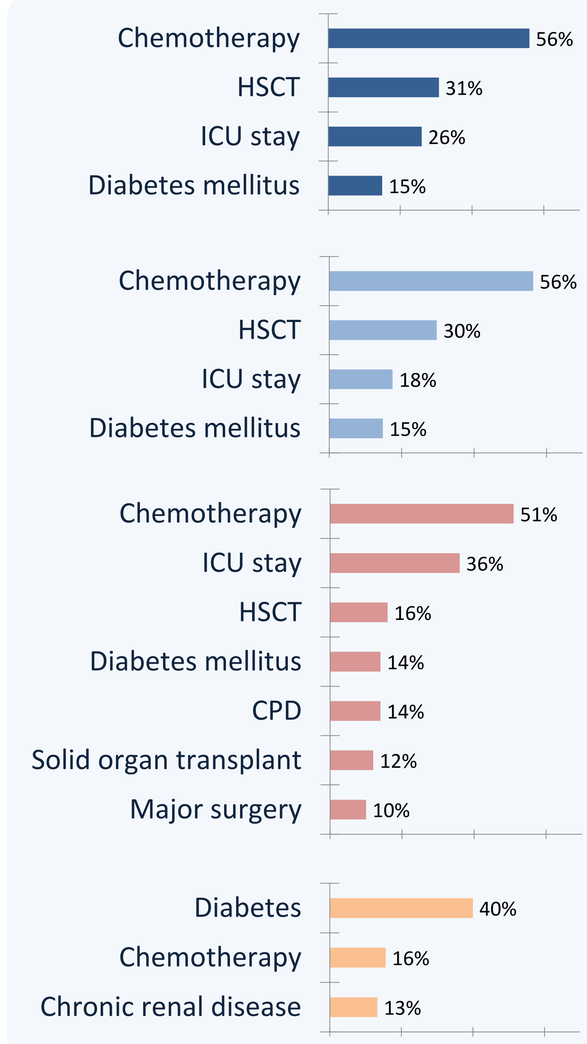


Figure 2. Distribution of Pathogens
From January 2003 – March 2015, 411 cases have been documented and considered valid after quality control. Mucoromycotina are the most commonly registered pathogens followed by *Fusarium* spp. and yeasts.

Risk Factors



Sites of Infection

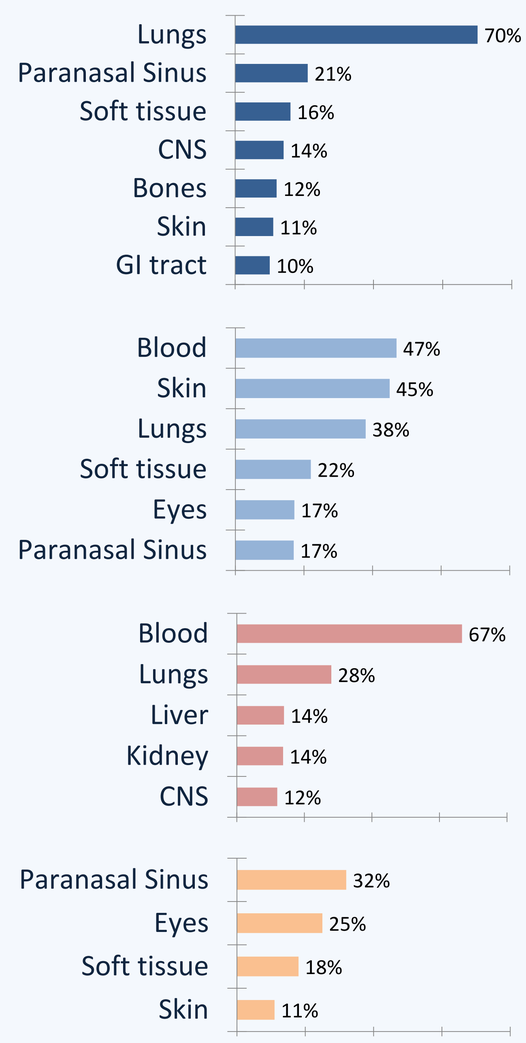


Figure 3. Risk factors and sites of infection given for the four most common pathogens
Chemotherapy is the most important risk factor for most fungi except for Dematiaceae. The most common sites of infection vary greatly between the different fungi. Only the more common risk factors and sites of infection (≥ 10%) are shown.
CNS Central Nervous System, **CPD** Chronic Pulmonary Disease, **GI** Gastrointestinal, **HSCT** Hematopoietic Stem Cell Transplantation, **ICU** Intensive Care Unit

Outcome

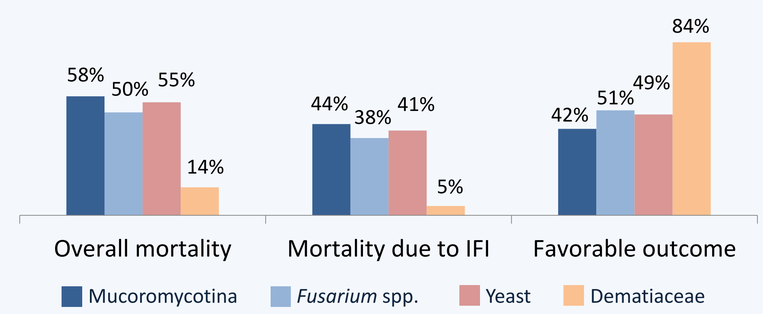


Figure 4. Outcome for the four most common pathogens
Outcome is poor for most infections with emerging fungi with the exception of IFI due to Dematiaceae.
Favorable outcome: complete and partial response to antifungal therapy

Conclusions

- ✓ Efficient method for collecting patient information: 470 cases of rare IFI have been documented from 24 countries and to date, 411 cases are verified by the Fungiscope quality control team
- ✓ Immediate diagnostic and therapeutic services
- ✓ Data provide a comprehensive view on the epidemiology and clinical presentation of rare IFI

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