Epidemiologic spectrum of *Aspergillus* involved in mycosis in region of Monastir, Tunisia: a 5 year retrospective study

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Introduction and purpose

Epidemiological aspects of Aspergillosis are in perpetual changing. They are typically caused by *Aspergillus fumigatus*, followed by *Aspergillus flavus*, *Aspergillus nidulans* and *Aspergillus* niger, However non-*fumigatus* species are now increasingly reported as common etiologic agents, depending on the organ involved, risk factors and the countries. Identification of species is crucial because of variations in the antifungal susceptibility profiles.

Therefore, the main aim of this study is to present the current trends in the epidemiology of *Aspergillus* spp.

Methods

This is a retrospective study over a 5 year period from January 2016 to March 2021 of all strains of *Aspergillus* isolated from samples sent to the Mycology Laboratory of Fattouma Bourguiba University Hospital in Monastir, Tunisia. The mycological diagnosis was based on direct microscopy of specimens and species identification by culture on Sabouraud-Chloramphenicol and Malt mediums.

Results

Over the 5 years of the study 134 *Aspergillus* strains were isolated collected from 110 patients. The mean age of these patients was 50 years (ranged from 2 to 89 years). Females were predominant (58.2%) with a sex ratio of 0.7 (Figure I). The *Aspergillus* strains were isolated from the external auditory canal (83%), respiratory tract (9%). The majority of isolates were collected in winter (30.6%) and summer (28.4%). The direct microscopy was positive for 71.7%. It showed only mycelial filaments for 47%, of specimens, yeasts and mycelial filaments for 8.2% of specimens, only yeasts for 6.7% and *Aspergillus* heads for 1.5% of specimens. A combination of two *Aspergillus* species was identified in 4 patients (2.9%).Association of Aspergillus and Candida were found in 21.6% of cases. The most frequently isolated species were *Aspergillus flavus* (42.5%) and *Aspergillus* niger (39.5%) followed by Aspergillus terreus (3%) and *Aspergillus fumigatus* (2.2%) (Table I). The species could not be identified in 9% of the cases. During the study period, 15 patients presented relapses, 80% of whom were infected with the same *Aspergillus* species. In these patients, the mean time to relapse was two and a half months.

Table I. Distribution of *Aspergillus* species.

Espèce	N	%
Aspergillus flavus	*57*	*42,5*
Aspergillus niger	53	39,5
Aspergillus sp	13	9,7
Aspergillus terreus	4	3
Aspergillus fumigatus	3	2,2
Aspergillus tamarii	2	1,5
Apergillus fumigatus	1	3
Total	134	100

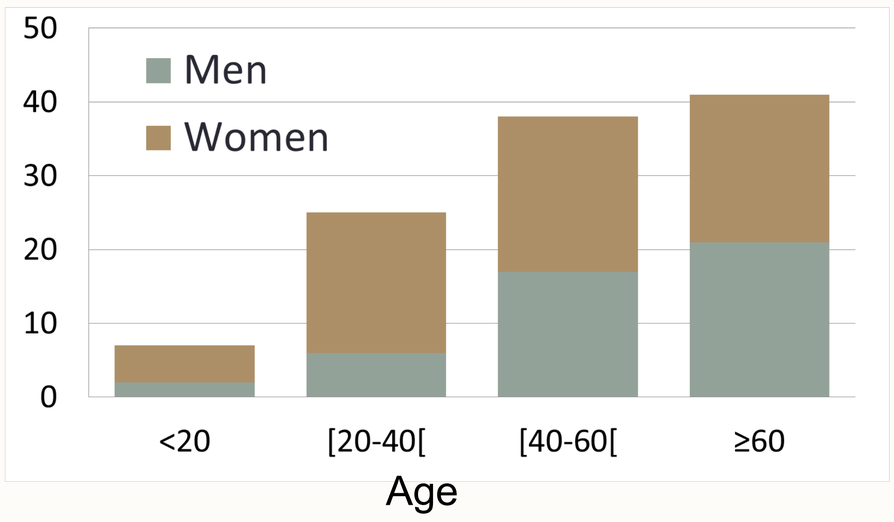

Figure I. Age and gender distribution

Discussion

In our work, the majority of isolates were collected from the external auditory canal and respiratory tract. In Europe, *Aspergillus fumigatus* causes the majority of cases of aspergillosis, followed by *Aspergillus flavus*, *Aspergillus niger* and *Aspergillus* terreus [1]. In developing countries such as Tunisia *Aspergillus flavus* and Aspergillus niger are predominant species which is in line with our work [2]. These facts are very important to more accurate selection of empirical antifungal therapy

Conclusion

Epidemiology spectrum of aspergillosis are in a constantly changing. The notable changement in the frequency of Aspergillus species, their involvement in the various type of aspergillosis emphize the importance of the local epidemiology assessment

References

1) Lass-Flörl C. The changing face of epidemiology of invasive fungal disease in Europe. Mycoses. mai 2009;52(3):197-205.

2) Gheith S, Saghrouni F et al. In vitro susceptibility to amphotericin B, itraconazole, voriconazole, posaconazole and caspofungin of Aspergillus spp. isolated from patients with haematological malignancies in Tunisia. SpringerPlus. 2014;3(1):19.