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Letter

Emergence of Microsporum audouinii in a tertiary hospital in Brazil

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To the Editor

Microsporum audouinii is an anthropophilic dermatophyte fungus associated with skin and scalp mycosis and has reemerged recently. It is one of the most common causative agents of tinea capitis in Central African countries and its prevalence has increased in other countries, especially in Europe.[1,2] Between 2005 and 2021, 6 microsporum audouinii outbreaks were reported: two from Denmark and the remaining from Germany, Sweden, Switzerland, and Australia.[3,4] Microsporum audouinii is not considered endemic to South America. In 2017, this species was reported by Brito-Santo et al for the first and only time in Brazil, causing tinea capitis in two brothers.[5] We herein report the increasing incidence of tinea capitis caused by microsporum audouinii in a reference tertiary center from Rio de Janeiro, Brazil, and emphasize the possible causative pathogen shift in recent years.

The medical records of all patients diagnosed with tinea capitis from 2019 to 2023 at a University Hospital were reviewed out of 8,000 mycological exams carried out. Forty-four patients were identified, and 41% of them (N=18) had microsporum audouinii as the causative agent. A typical clinical infection in a child is shown (**Figure 1A-F**). Although only a single case was reportedly caused by this species, the number of cases tended to increase in the following years, with 6 cases in 2023. In parallel, tinea capitis caused by microsporum canis became less common (**Figure 2**). This differs from that observed in an epidemiological profile study in São Paulo City, Brazil, where microsporum canis was the main causative agent, followed by Trichophyton tonsurans from 2015 and 2017.[6,7]

Among the 18 cases, 16 (88.8%) were male and the median age was 6.8 (range, 3-11) years. Regarding clinical manifestations, 7 (38.8%) patients presented with a single round-shaped patch of noncicatricial alopecia with fragmented hair and 11 (61.1%) presented with multiple patches with similar characteristics. Although the genus microsporum has been associated with a clinical presentation of few and larger lesions, other authors have described that the clinical pattern may not be a good parameter to predict the causative agent.[8] On direct mycological examination, 13 (72.2%) cases presented with ectoendothrix parasitism and three (16.3%) with endothrix parasitism. In two cases, direct mycological examination results were negative, and the diagnosis was made based on fungal isolation in culture. The etiological agents were identified based on their morphological features, including macroscopic and microscopic culture characteristics. The growth of microsporum audouinii on sterile rice grain was used to differentiate it from microsporum canis in some cases whenever in doubt. Three (16.6%) patients reported that the lesions appeared after having a haircut at a barbershop. For the other cases, no risk factors for transmission could be identified. Another risk factor related to anthropophilic fungi is contact with other infected individuals at school, in the neighborhood, or within the family.

Most patients (55%) were treated with oral terbinafine for 6 to 8 weeks, leading to a cure. Oral griseofulvin is our treatment of choice when microsporum species is identified. However, it is still unavailable in our country. In a recent study from Denmark that conducted antifungal susceptibility testing of tinea caused by microsporum audouinii, patients not responding to oral griseofulvin had higher minimal inhibitory concentration values. The infection was cleared after switching to oral terbinafine or fluconazole.[3] Terbinafine minimal inhibitory concentration values from the literature range from 0.002-0.125mg/l·.[3]

This study highlights the importance of epidemiologic studies of dermatophyte species as the causative agents constantly change over time and geographic areas. We believe that the incidence of microsporum audouinii infection is increasing in Rio de Janeiro. However, because dermatophytosis is not a notifiable disease, the real

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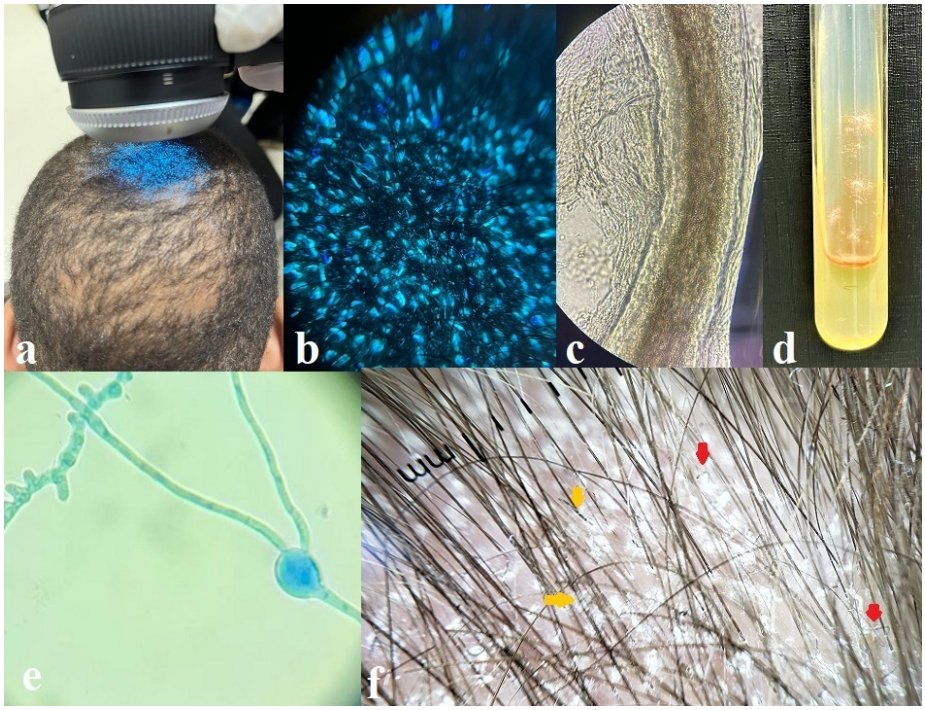


Figure 1. ***A)*** *8-year-old boy treated with griseofulvin for 8 weeks.* ***B)*** *Observation of the bluish bloom under Wood's light.* ***C)*** *Direct mycological examination of the hair shaft demonstrates endoectotrix parasitism.* ***D)*** *Granular-cottony culture organized in peach color with brownish underside of microsporum audouinii.* ***E)*** *Micromorphology of microsporum audouinii with the presence of chlamydoconidium.* ***F)*** *Intense scalp scarring, red arrows presenting dystropic corkscrew hairs, a sign of endothrix parasitism, whereas the yellow arrows represent the morse code sign, characteristic of ectothrix.*

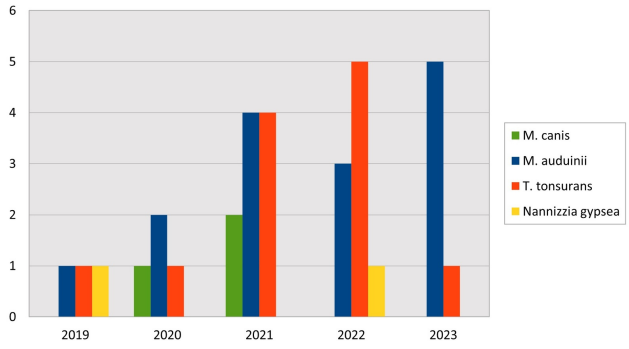


Figure 2. *Graph representing the incidence of dermatophyte species causing tinea, demonstrating the increase in microsporum audouinii.*

numbers of cases and pathogens involved remain unknown. Multicenter epidemiologic studies are needed to clarify the real picture of microsporum audouinii in Brazil and South America.

Potential conflicts of interest

The authors declare no conflicts of interest.

References

1. Brito-Santos F, Figueiredo-Carvalho MHG, Coelho RA, Sales A, Almeida-Paes R. Tinea Capitis by Microsporum audouinii: Case Reports and Review of Published Global Literature 2000-2016. *Mycopathologia*. 2017;182:1053-1060. doi:10.1007/s11046-017-0181-1. PMID:28736794

2. Sacheli R, Adjetey C, Darfouf R, et al. A one-year survey of Microsporum audouinii infections in Belgium: epidemiological and genotypic characterization. *Clin Microbiol Infect*. 2016;22:285.e9-17. doi:10.1016/j.cmi.2015.11.012. PMID:26686810

3. Gupta AK, Mays RR, Versteeg SG, et al. Tinea capitis in children: a systematic review of management. *J Eur Acad Dermatol Venereol*. 2018;32:2264-2274. doi:10.1111/jdv.15088. PMID:29797669

4. Johansen CD, Shen JJR, Astvad KMT, Jemec GBE, Christensen JJ, Saunte DML. Exploring treatment and antifungal resistance in an outbreak of tinea caused by Microsporum audouinii. *Mycoses*. 2024;67(7):e13760. doi:10.1111/myc.13760. PMID:38943042

5. Gupta AK, Friedlander SF, Simkovich AJ. Tinea capitis: An update. *Pediatr Dermatol*. 2022;39(2):167-172. doi:10.1111/pde.14925. PMID:35075666

6. Veasey JV, Miguel BAF, Mayor SAS, Zaitz C, Muramatu LH, Serrano JA. Epidemiological profile of tinea capitis in São Paulo City. *An Bras Dermatol*. 2017;92(2):283-284. doi:10.1590/abd1806-4841.20175463. PMID:28538903

7. Rodríguez-Cerdeira C, Martínez-Herrera E, Szepietowski JC, et al. A systematic review of worldwide data on tinea capitis: analysis of the last 20 years. *J Eur Acad Dermatol Venereol*. 2021;35(4):844-883. doi:10.1111/jdv.16951. PMID:32976663

8. Azulay-Abulafia L, Schetchman RC, Llanos FC. Dermatofitoses. In: *Micologia Médica*. 1st ed. Guanabara Koogan; 2022:55-70.