Phylogenetic Identification and In Vitro Antifungal Susceptibility of the Rare Clinical Fungus Coniochaeta fibrosae

LUDMILLA TONANI[1], RODRIGO DE CARVALHO SANTANA[2], THAÍSA MARIA DA RODA LINO[1], MARCIA REGINA VON ZESKA KRESS[1]

[1.] FACULDADE DE CIÊNCIAS FARMACÊUTICAS DE RIBEIRÃO PRETO, DEPARTAMENTO DE ANÁLISES CLÍNICAS TOXICOLÓGICAS E BROMATOLÓGICAS, RIBEIRÃO PRETO -SP, BRASIL
[2.] FACULDADE DE MEDICINA DE RIBEIRÃO PRETO, DEPARTAMENTO DE CLÍNICA MÉDICA DA FACULDADE DE MEDICINA DE RIBEIRÃO PRETO, RIBEIRÃO PRETO -SP, BRASIL

Rare and emerging fungi have increasingly been recognized as opportunistic agents of infection, particularly in immunocompromised hosts. In this scenario, accurate etiological identification is essential, since uncommon fungal taxa may exhibit distinct and poorly characterized antifungal susceptibility profiles. The genus *Coniochaeta* comprises environmentally associated ascomycetes, including endophytic and endolichenic species, with occasional reports of opportunistic human infections. However, clinical information on several species remains scarce, limiting both epidemiological knowledge and therapeutic interpretation. This study aimed to characterize a rare fungal isolate, LMC25001, recovered from a patient with Multiple Myeloma presenting gastrointestinal symptoms during immunosuppressive therapy, through morphological and molecular identification, phylogenetic analysis, and in vitro antifungal susceptibility testing. The isolate was initially evaluated by macroscopic and microscopic morphology. Molecular identification was performed by sequencing the ITS and LSU ribosomal regions followed by phylogenetic analysis using the Maximum Likelihood method. Antifungal susceptibility testing was performed by broth microdilution, following the CLSI M27-A3 document with modifications, to determine minimum inhibitory concentrations (MICs) for clinically relevant antifungal agents. The clinical isolate LMC25001 was identified as *Coniochaeta fibrosae*. Phylogenetic analysis supported its placement within the genus *Coniochaeta*, confirming the molecular identification obtained from ITS and LSU sequencing. The antifungal susceptibility profile revealed MIC values of 0,25 µg/mL for amphotericin B, 1 µg/mL for posaconazole, and 2 µg/mL for itraconazole. Voriconazole exhibited a MIC of 8 µg/mL, while fluconazole and micafungin showed MICs above 32 µg/mL. Although no clinical breakpoints or epidemiological cutoff values are available for *Coniochaeta* spp., the MIC distribution suggests greater in vitro activity of amphotericin B, posaconazole, and itraconazole compared with voriconazole, fluconazole, and micafungin. *Coniochaeta fibrosae* is an endolichenic fungal species originally isolated from lichen-associated substrates and its role as a human-associated fungus remains poorly understood. There are few reports of *Coniochaeta* spp. causing superficial infections and fungemia, and, to date, no cases involving this specific species have been described. The recovery of *C. fibrosae* from a clinical context highlights the importance of molecular identification for uncommon fungi that may be underestimated or misidentified by conventional methods. The correlation between in vitro susceptibility data and clinical response remains uncertain for this genus. The literature reports favorable clinical outcomes even in the presence of elevated MICs for certain antifungal agents, possibly influenced by host-related factors, pharmacokinetic/pharmacodynamic

parameters, and effective source control. This study reports the molecular identification and antifungal susceptibility profile of a rare clinical isolate identified as *Coniochaeta fibrosae*. The findings reinforce the relevance of combining multiple laboratory tests for the characterization of uncommon fungal agents. Although clinical interpretation remains limited by the absence of established breakpoints, amphotericin B and posaconazole may represent potential therapeutic options in similar contexts.

Agradecimentos: FAPESP for the financial support, and HCRP for supplying the fungal sample.