Onychomycosis caused by *Arthrinium arundinis* in leprosy

patient: Case report

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Objectives: to report a case of onychomycosis caused by *Arthrinium arundinis*, a rare infectious fungus, in lepromatous leprosy patient in Rio Grande do Sul, Brazil.

Methods: a female patient with 56 years-old, with relapsing lepromatous leprosy, in first readministration of multidrug therapy, the collection of nail material for mycological exams was performed after clinical observation of total toenails dystrophy (**Figure 1A**) suggesting onychomycosis. Direct and cultural mycological examinations were performed and for species identification, the sequencing of Internal Transcribed Spacer (ITS) of rDNA using primers ITS 5 and 4 was realized and it was confirmed by evaluation of novel collection isolate. Eleven clinical antifungals (all Sigma-Aldrich, USA) were evaluating according to the protocol M38-A2 of the Clinical and Laboratory Standards Institute (CLSI), using the microdilution technique.

Results: Direct examination of the nail scrapings showed hyaline septate hyphae, branching at acute angles (**Figure 1B**). In Mycosel culture, white and flat colonies weakly sporulated was observed after 14 days of incubation in 25°C and no growth was observed at 37°C. In potato dextrose agar, after 7 days at 25°C showed pale-brown single-celled conidia with a clear brightly opalescent equatorial ring. Conidia were sympodially generated and large cluster-aggregated conidiogenous cells were observed (**Figure 1C**). The species, *Arthrinium aurundinis*, was identified by ITS sequencing with 99% of identify and 100% of coverage with type strain CBS 106.12. The minimal inhibitory concentrations (**MICs**) obtained of antifungals were (µg/mL): terbinafine (0.0312); amphotericin B (0.5); posaconazole (1.0); ketoconazole and ciclopirox olamine (8.0); itraconazole, voriconazole and tioconazole (≥16.0); fluconazole and griseofulvin (>64.0). The minimal effective concentration (**MEC**) for caspofungin was > 64 µg/mL. Excepting terbinafine, amphotericin B and posaconazole, the isolate had higher MICs/MEC for all other antifungals.

Therefore, the initial treatment was topic terbinafine twice a day, since rifampicin, one of the antibiotics administered in multidrug leprosy therapy, increase the clearance or metabolism of some antifungal, such as terbinafine and itraconazole, respectively, leading to a decrease in the effectiveness and efficacy of mycosis treatment.

Conclusions: This is the second report of onychomycosis caused by *A. arundinis* and the first relate of this fungus infection in leprosy patient. Non-dermatophyte fungi usually present profiles less susceptible to antifungal than dermatophytes and patients with leprosy are predisposed to be infected by these fungi due to the ease of their entry by the frequent injuries caused by the neural compromise caused by *Mycobacterium leprae* during its infectious process. Thus, evaluations of superficial mycoses, with identifications and antifungal tests, besides patient follow-up, are important for the outcome of the cases.

Figure 1. Onychomycosis caused by *Arthrinium aurundinis* in leprosy patient (A); Direct mycological examination (B); Microculture in potato dextrose agar at 25 °C during 7 days (C).