

TITLE: SEROLOGICAL SURVEY IN PATIENTS WITH PARACOCCIDIOIDOMYCOSIS DUE TO *PARACOCCIDIOIDES BRASILIENSIS* FROM A REFERENCE CENTER IN THE STATE OF RIO DE JANEIRO, BRAZIL.

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ABSTRACT

The description of the cryptic species of the genus *Paracoccidioides* changed the comprehension about important aspects of Paracoccidioidomycosis (PCM). The serological antigenic response to *Paracoccidioides brasiliensis* and *Paracoccidioides lutzii* infections has discordant results according to the geographic prevalence of each species. Also, it was demonstrated that there is a high rate of inter-laboratorial variability among reference centers concerning PCM serodiagnosis. This work aims to describe the serological response profile and the related molecular identification of the strain isolated from PCM cases in a reference center in the state of Rio de Janeiro, Brazil, an important endemic area with few information about the prevalence of these cryptic species. *Paracoccidioides* spp. clinical isolates were subcultured in Fava-Netto agar and genomic DNA was used to perform molecular identification by partial sequencing of *arf* and *gp43* genes. Serology for PCM was evaluated in this study using Ouchterlony double immunodiffusion (ID) at the moment of diagnosis and at patient's discharge. The antigen used in ID tests was a mixed exoantigen from strains Pb01 and Pb18, *P. lutzii* and *P. brasiliensis* S1, respectively. Forty-three *Paracoccidioides* spp. strains, isolated from 1998 to 2014, were recovered being 38 molecularly identified as *P. brasiliensis* S1, and five as *P. brasiliensis* PS2. From the 38 PCM cases caused by *P. brasiliensis* S1, 23 presented the chronic type (one with HIV controlled infection), 12 presented the acute/subacute type, and three presented mixed clinical forms associated to HIV/aids. ID test was positive in 31 (81.6%) cases due to *P. brasiliensis* S1, with titers ranging from 1 to 512. In the seven (18.4%) patients with negative results from this group, five (13.1%) presented the acute/subacute type, with two aids-associated cases. All *P. brasiliensis* PS2 cases presented the PCM chronic type and had positive ID results, with titers ranging from 1 to 8. After treatment and discharged, all *P. brasiliensis* PS2 infected patients presented negative ID results. On the other hand, 10 *P. brasiliensis* S1 infected patients still presented ID titers ranging from 1 to 8 at discharge. These results demonstrate the prevalence of two phylogenetic species of *P. brasiliensis* in the endemic PCM area of Rio de Janeiro, and highlight the efficacy of serology in *P. brasiliensis* PS2 infected patients using antigens derived from other phylogenetic species.

Keywords: Paracoccidioidomycosis; *Paracoccidioides brasiliensis* S1; *Paracoccidioides brasiliensis* PS2; cryptic species; serology.

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