
Cryptococcus neoformans varieties isolated from patients with aids referred to a hospital of São Paulo city during 1996-1999

RESUMO
Cryptococcus neoformans é uma levedura capsulada que apresenta tropismo pelo sistema nervoso central causando meningoencefalite. É a micose mais freqüente em pacientes com AIDS, e é responsável pela alta morbidade e mortalidade. Há duas variedades: var. neoformans e var. gattii. C. neoformans var. neoformans está distribuído mundialmente e é comumente encontrado em fezes de aves, principalmente de pombo. C. neoformans var. gattii está geograficamente limitado a regiões tropicais e subtropicais e está associado a algumas espécies de árvores, principalmente, Eucalyptus sp. A proposta desse estudo foi de avaliar a prevalência das variedades de Cryptococcus neoformans isoladas de 452 amostras de líquido cefalorraquiano (LCR) provenientes de 183 pacientes com AIDS, internados no Instituto de Infectologia Emílio Ribas – São Paulo-SP, de 1996 a 1999, utilizando meio canavanina-glicina-bromotimol (CGB). Do total 452 amostras, em 446 (98,7%) foram detectados C. neoformans var. neoformans e C. neoformans var. gattii em 6 (1,3 %) amostras.

Palavras-chave. Cryptococcus neoformans, variedades de Cryptococcus neoformans, Líquido Cefalorraquiano, AIDS.

ABSTRACT
Cryptococcus neoformans is an encapsulated yeast that presents tropism for central nervous system, and causes meningoencephalitis. Cryptococcosis is the most frequent mycosis in patients with AIDS, and it is the cause of high morbidity and mortality. C. neoformans presents two varieties var. neoformans and var. gattii. Cryptococcus neoformans var. neoformans has been world-wide isolated from avian feces, especially pigeon excreta. C. neoformans var. gattii is geographically restricted to tropical and subtropical regions, and it is associated with some trees species, mainly Eucalyptus sp. The proposal of this study was to evaluate the prevalence of Cryptococcus neoformans varieties isolated from 452 cerebrospinal fluid (CSF) samples from 183 patients with AIDS referred to the Instituto de Infectologia Emílio Ribas - Sao Paulo-SP, from 1996 to 1999. CSF samples were cultured on canavanine-glycine-bromothymol blue medium. Of 452 samples, C. neoformans var. neoformans was isolated in 446 (98,7%), and C. neoformans var. gattii in 6 (1,3%) samples.

Key words. Cryptococcus neoformans, cerebrospinal fluid, varieties Cryptococcus neoformans, AIDS.
INTRODUCTION

Cryptococcus neoformans is an encapsulated yeast that presents tropism for the central nervous system and causes meningoencephalitis. Two varieties and five serotypes of Cryptococcus neoformans were differentiating by using the canavanine-glycine-bromothymol blue agar (CGB) medium and the serotypes are characterized by slide agglutination tests.

In 1999, a third variety, C. neoformans var. grubii, was proposed for C. neoformans var. neoformans serotype A2.

Cryptococcus neoformans var. neoformans has been isolated worldwide from avian droppings, especially pigeon excreta and soil enriched with this avian excreta. The C. neoformans var. gattii is geographically restricted to mainly tropical and subtropical regions. The first isolation of this variety (gattii) was made in Australia were the investigators established its specific ecological association with Eucalyptus camaldulensis. In this country, the molecular studies indicated that exist epidemiological association between mammalian disease and exposure. To date the var. gattii has been isolated from native trees in the Brazil (Moquilea tomentosa, Cassia grandis, Guettarda acreana) and in Colombia (Terminala catappa). 8,14-17.

In Brazil, 4.7% of acquired immunodeficiency syndrome (AIDS) related infections are caused by C. neoformans var. neoformans. Since then the HAART, after toxoplasmosis, cryptococcosis is the most prevalent neurological disease in AIDS patient and a frequent AIDS-defining condition. C. neoformans var. gattii rarely is the agent of cryptococcosis in AIDS patient, even in areas where the infection by this variety occurs endemically, is associated with immunosuppressed patient. In the city of São Paulo both C. neoformans var. neoformans and C. neoformans var. gattii were presents in urban environment at sites where large numbers of people normally gather.

Some studies carried through in the states of Rio de Janeiro and São Paulo had shown that the majority of the patients were infected by the C. neoformans var. neoformans (serotype A and D) and, a minority was infected by C. neoformans var. gattii (serotype B). The purpose of this study was to verify the prevalence of C. neoformans varieties in AIDS patients during a period of time in an Infectology Hospital in the city of São Paulo and knowledge more about the epidemiology of this pathogen in our city.

MATERIALS AND METHODS

We retrospectively analyzed 452 C. neoformans isolated of cerebrospinal fluid (CSF) samples from 183 patients with AIDS admitted at the Instituto de Infectologia Emílio Ribas, in São Paulo city, during 1996 to 1999.

The laboratory diagnosis of cryptococcal infection was based on positive India ink preparation and/or positive culture of CSF in Sabouraud dextrose agar.

The identification of the colonies of yeasts was based on cellular micro morphology and by API 20C AUX (BioMerieux, France), a commercial kit.

The identification was confirmed by standard physiological and biochemical methods that included thermo tolerance at 37°C, urease and phenoloxidase activity and assimilation tests.

The varieties of C. neoformans were determined by using the canavanine-glycine-bromothymol blue (CGB) medium. The growth and the change of color of the medium identified the variety gattii2,4,31.

RESULTS

The results shown that 446 CSF samples (98.7%) from 177 AIDS patients were C. neoformans var. neoformans and 6 CSF samples (1.3%) were C. neoformans var. gattii, during 1996 to 1999, at the Instituto de Infectologia Emílio Ribas, in São Paulo city.

DISCUSSION

Prior to the AIDS epidemic, cryptococcosis occurred sporadically throughout the world. Despite the incidence of cryptococcal infections has increased dramatically as a result of the AIDS epidemic, other conditions have been associated with an increased risk for C. neoformans infections like lymphoproliferative disorders, corticosteroid therapy and organ transplantation.

Pigeon excreta are the saprophytic source most commonly associated with C. neoformans mainly var. neoformans so the high prevalence of pigeons in urban area favor the exposure of humans to this variety.

C. neoformans var. neoformans is the variety overwhelmingly recovered from patients with AIDS in contrast with C. neoformans var. gattii infections that are rare in these patients. Some studies indicated that the majority of infections in AIDS patients with cryptococcal meningoencephalitis is caused by C. neoformans var. neoformans and serotype A. Despite the serotypes of C. neoformans hasn’t been determined; this study is in agreement with others in which the variety neoformans was the more prevalent than var. gattii in AIDS patients.

CONCLUSION

The variety neoformans was the most prevalent in CSF samples from AIDS patients in Instituto de Infectologia Emílio Ribas located in São Paulo city, during 1996 to 1999.
REFERENCES


29. Martins MA, Melhem MSC, Pukinskis SRBS, Cabrera MI, Soares MCB, Meira MCA et al. Variedades de cepas...

