

INTRODUCTION

• Oropharyngeal candidiasis (OPC) is the most common opportunistic infection in AIDS patients, occurring in 80 to 95% of HIV-positive patients, when the CD4 T-lymphocyte counts are below 200 cells/mm³. Increased retroviral replication and an associated decline in immune defenses render these patients particularly susceptible to OPC, to the extent that it is considered an early sign of HIV infection. The prolonged nature of the AIDS predisposes these patients to recurrent episodes of OPC that can increase in frequency and severity when HIV disease progresses.

• The advent of highly active antiretroviral therapy (HAART) in the management of HIV-infected patients, associated with increases of CD4 cell counts and decreases of HIV RNA viral load, has dramatically reduced the incidence of OPC and other opportunistic infections, changing the natural history of HIV-infection.

• The aims of this study were:

- 1) to investigate the prevalence of OPC and oral *Candida* colonization among HIV-infected population under HAART and
- 2) to determine the species distribution and *C. albicans* serotypes of yeasts isolates from HIV patients.

MATERIAL AND METHODS

• We conducted a prospective study over a 24-months period, from March 1998 to February 2000. AIDS patients were recruited from 2 institutions: Universidade Federal de São Paulo – UNIFESP/ERM, and Universidade Federal do Rio Grande do Norte – UFRN. Demographic and clinical data were recorded in specific case report forms. Blood samples of each patient were collected at baseline, 6 and 12 months thereafter, for performing CD4 cell count and HIV viral load, by RNA quantitative polymerase chain reaction (PCR) assay.

• **Oral sampling:** clinical samples were obtained by swabbing the oral cavity of each patient, immediately before the onset of the HAART, 6 and 12 months thereafter. The swabs were inoculated onto CHROMagar Candida® medium and incubated at 30°C for no more than 5 days. The colonies were stocked to perform phenotypical and genotypical testing.

• **Yeast identification:** green colonies isolated on CHROMagar Candida®, presumptively identified as *C. albicans* were subcultured on new plates of Sabouraud dextrose agar (SDA). Identification of *C. albicans* isolates was confirmed by chlamydoconidia production on cornmeal-Tween 80 agar. Colonies presenting different colours on CHROMagar media were subcultured on Sabouraud-dextrose agar plates for further identification. Non *albicans* yeasts isolates were submitted to microscopic morphology observation on cornmeal-Tween 80 agar, and carbohydrate fermentation and assimilation comprising 7 and 15 sugars, respectively. If necessary, organisms were also checked for urease production, nitrate assimilation, and ascospore formation.

• ***C. albicans* serotyping:** *C. albicans* cultures were incubated on Sabouraud-dextrose agar plates for 48 hours at 25°C. Small amount of specimen yeast cells was inoculated onto Candida Check test tray (Iatron Laboratories) and approximately 0,05 mL of specific sera (number 6) were added for test and physiological saline were added for control. The glass test tray was stirred well by rolling for about 1-2 minutes. Positive agglutination reaction was interpreted by the visualization of aggregates, considered indicative of *C. albicans* serotype A.

RESULTS

Demographic and clinical data of enrolled patients

Number of patients: 38

Sex: Masc = 21 (55%)

Age: Median = 34 years old

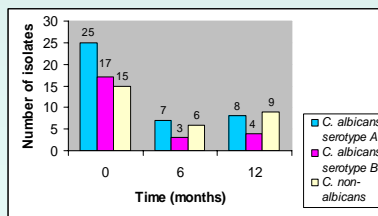
Range = 16 to 49 years old

Clinical category: A = 14 patients

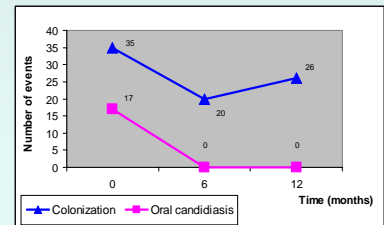
(CDC criteria) B = 11 patients

C = 13 patients

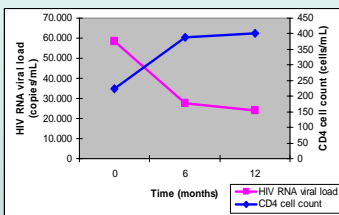
Ethiology and serotyping of *Candida* spp. isolates obtained from oral cavities of AIDS patients under HAART: follow-up of 12 months



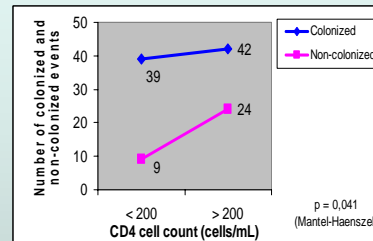
Impact of HAART on oral colonization and infection by *Candida* spp. in 38 AIDS patients



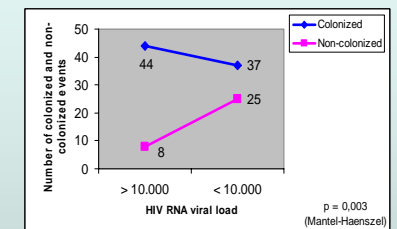
Impact of HAART on HIV RNA viral load and CD4 cell count variation in 38 AIDS patients: 12 months of follow-up



Correlation between CD4 cell count and *Candida* oral colonization in 38 AIDS patients under HAART: evaluation of 114 samples collected within a 12 months-period of follow-up



Correlation between HIV RNA viral load and *Candida* oral colonization in 38 AIDS patients under HAART: evaluation of 114 samples collected within a 12 months-period of follow-up



CONCLUSIONS

1. *C. albicans* serotype A was the major agent of oral infection and colonization among AIDS patients.
2. The use of HAART was associated with significantly reduction of both oral colonization and infection due to *Candida* spp.
3. The decline of oral *Candida* colonization and infection in AIDS patients submitted to HAART may be influenced not only by the CD4 cell count increase, but also by the decrease of the HIV RNA viral load.

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