Oral fungus flora in diabetic patients using oral prosthesis

Nº29

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Introduction

The attachment of yeasts on *Candida* type to tissues can be an indicator of its pathogenic potential. Different levels of attachment can be explained by its phenotypic heterogeneity of species that indicate different hydrophobicity, produces different proteases secretions and extracellular phospholipases, hyphae development and even by the conditions of the oral cavity. Several studies consider that Diabetes *Mellitus* and the use of removable dental prosthesis are positive cofactors for the colonization of this kind of yeast fungus, especially on individuals between 50 and 70 years old [1,2].

Objective

The aim of this study was to evaluate the prevalence of *Candida* and its virulence in diabetic and non-diabetic patients with removable prosthesis.

Material and Methods

After complying with the ethical and legal requirements, the procedure was initiated with the collection of samples from the oral cavity with a sterile swab in direct contact with the dental prosthesis mucosa of the diabetic and non-diabetic patients using partial removable prosthesis. Samples were collected in the University Clinic of ISCSEM and in the Oral rehabilitation Clinic of Miraflores.
The laboratorial process took place in the microbiology laboratory of ISCEM. The lab work was divided in two parts:
(i) Identification of phenotypic species of Candida (Figure 1);
(ii) Study of the virulence of isolated species – production of hydrolytic enzymes (Figure 1).
The statist analysis of the results was treated in IBM SPSS version 20.0.

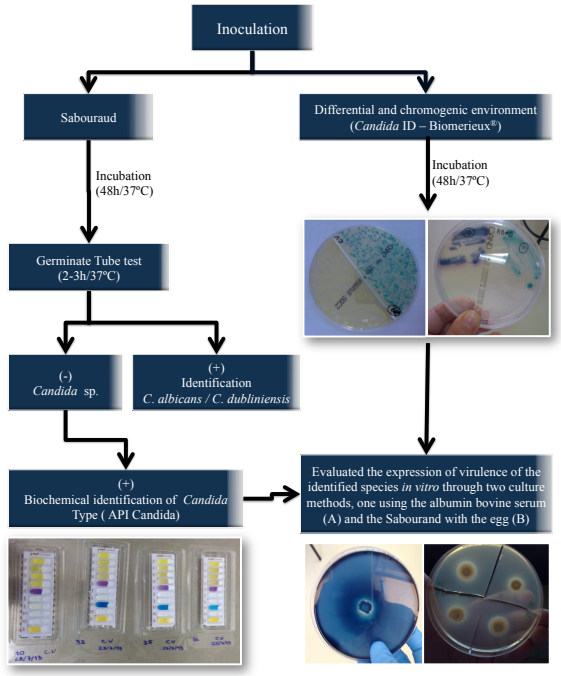


Figure 1 – Scheme of the inoculation of *Candida* strains isolation from samples collected from the oral cavity and in vitro evaluation of virulence expression revealed in appearance of transparent halos resulting albumin degradation (A) and phospholipid (B).

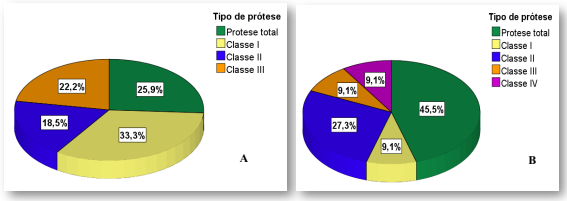
Results and Discussion

CHARACTERISTICS OF THE SAMPLE:

- Of the 38 patients included in this study, 11 were diabetic and 27 non diabetic. The majority in both groups were females.
- The average age in the non-diabetic group was 59 years old and in the diabetic group it was 64.
- The age indicates to be one of the factors for predisposition for the development of Candida in the oral cavity, not only by its prevalence, but also because this age group category is more susceptible to infections, immunological changes and systemic diseases [3-9].

TYPES OF REMOVABLE PROSTHESIS USED:

- The majority of the non-diabetic patients were Type I, Kenneky classification toothless (33, 3%) and the diabetic were total edentulous (45, 5%) (Graph 1).
- This fact suggest that exist a correlation between the disease and the early loss of teeth. On the other side, the diabetes seems to be a predisposition factor for *Candida* colonization [5,9].



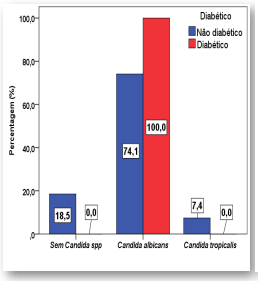
Graph 1 – Type of removable prosthesis used in non-diabetic (A) amd diabetic patients (B)

PRESENCE OF *CANDIDA* SP.:

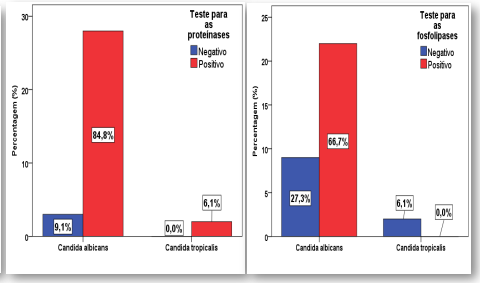
- 81,5% of the participants were colonized by *Candida*.
- The distribution by species of *Candida* showed that *C. albicans* was the most prevalent despite the existence of DM disease. These results were consistent with other studies already published [3-5].
- In the diabetic group, the only isolated species was *C. albicans*.
- In the non-diabetic group were isolated *C. albicans* (74,1%) and *C. tropicalis* (7,4%) (Graph 2).

EXPRESSION OF VIRULENCE IN THE SPECIES ISOLATED:

- In virulence studies evaluation of isolated, by the detection of proteases and phospholipases, highlights the majority of the positive results for *C. albicans* and only 6,1% of *C. tropicalis* in the proteases test (Graph 3). In both tests, it's not verified a significant difference between groups.



Graph 2 – *Candida* sp. presence in diabetic and non-diabetoc patients.



Graph 3 – Proteases (A) and phospholipases tests (B) in *Candida* sp.

Conclusion

- ✓ The obtained results suggest a higher association between the colonization of *C. albicans* and the diabetic patients.
- ✓ The majority of isolated funguses expressed virulence factors.
- ✓ Since the number of isolates wasn't too expressive, it wasn't possible to stablish significant statistic comparison between the two groups regarding hydrolytic enzymes.

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