Subgingival sites and oral cavity as reservoirs for *Candida* spp. in diabetics and non-diabetics

ISHAM
INTERNATIONAL SOCIETY FOR HUMAN AND ANIMAL MYCOLOGY
AMSTERDAM
30 JUNE – 4 JULY 2018

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Objectives

Chronic periodontitis (CP) and oral mucocutaneous candidiasis have been considered as chronic complications of Type 2 Diabetes (T2D). The potential role of yeasts in the pathogenesis of periodontitis is especially important for diabetic patients. The aim of this study was to detect *Candida* spp. on the tongue and in subgingival sites from systematically healthy subjects and subjects with T2D and CP. Furthermore, the present study aimed to find a potential difference in the detection of yeasts on the tongue and in subgingival samples, in order to determine subgingival areas as potential reservoirs of yeasts.

Methods

A total of 146 patients were included in this study. They were divided into four groups as shown in figure 1.

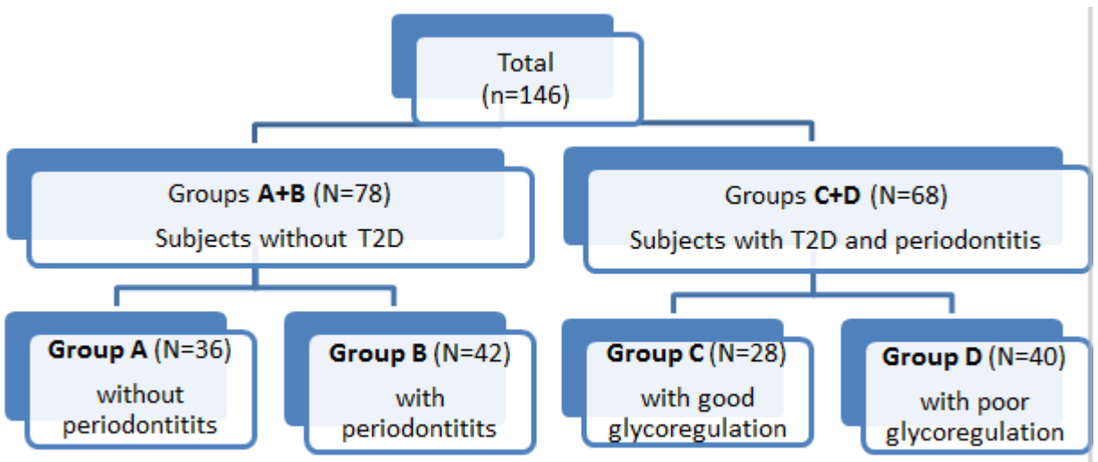

Figure 1. Study design with study groups

Cotton swab samples from tongue and subgingival samples were obtained from each patient using sterile paper points and a sterile curette as shown in Figure 2.

Figure 2. Subgingival sampling.
A: With 2 sterile paper points; B: With sterile curette

Information about parameters that could potentially predict the presence of *Candida* spp. was collected. It included self-reported information about education, xerostomia, blood type, everyday intake of sweets and smoking habits. Fasting plasma glucose levels (FPG), HbA1c, hematological parameters (RBC, Hgb, HCT, MCV, MCH, MCHC, RDW) and sedimentation rate were measured

Results

Candida spp. was more prevalent in diabetics with poor glycoregulation than in other groups ($\chi 2$: A vs D, p=0.019, B vs D, p=0.002 and C vs D, p=0.025). Subjects with T2D had a significantly higher prevalence of *Candida* spp. detection (37.3%), than systematically healthy subjects ($\chi 2$, p=0.013). The presence of *Candida* spp. in subgingival areas was 29.25% (43/146). Occurrence of *Candida* spp. in group D was significantly higher than in group A ($\chi 2$, p=0.018), group B ($\chi 2$, p=0.023) and group C ($\chi 2$, p=0.005). There were 22/146 (15.07%) cases where yeasts were not detected on the tongue, but were found in the subgingival area. Multivariate regression model showed that HbA1c was only the predictor of *Candida* spp. on the tongue and in subgingival plaque samples.

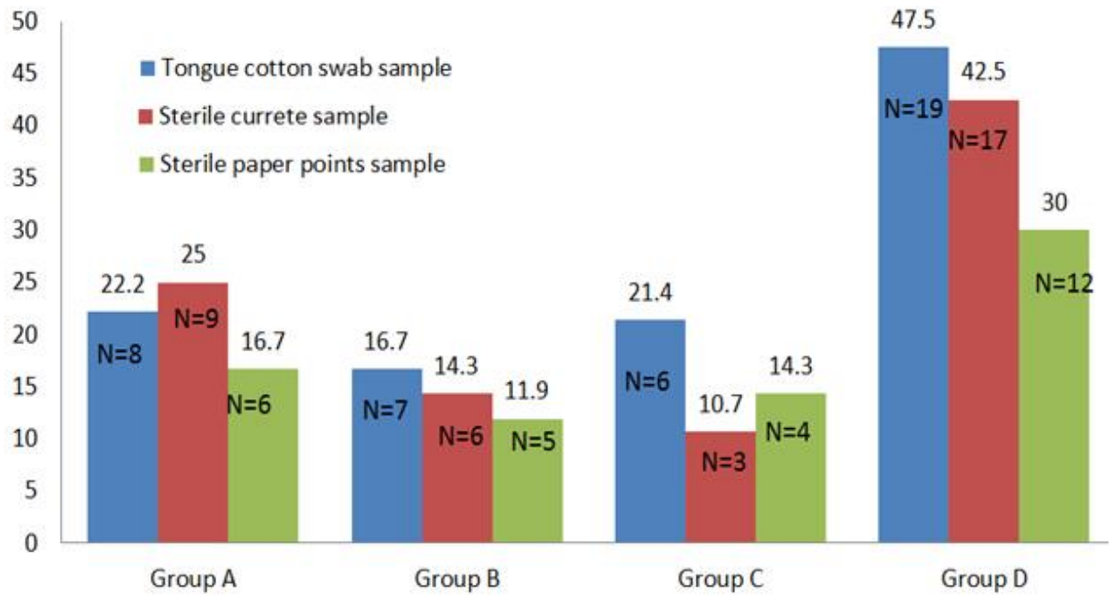

Figure 3: Frequencies of Candida spp. detection on dorsum of tongue and in subgingival areas

Conclusion

Presence of *Candida* spp. on the tongue and subgingival sites is higher in diabetics with poor glycoregulation and is influenced only by HbA1c serum level. High frequency of *Candida* spp. detection in subgingival areas (even when they are not found on the tongue) should be clarified as potential reservoir of these microorganisms.

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2. Petrović SM, Barać M, Pfićer JK, Radunović M, Jotić A, Pucar A. Presence of Different *Candida* Species at Denture Wearers With Type 2 Diabetes and Clinically Healthy Oral Mucosa-Pilot Study. Balkan Journal of Dental Medicine. 2018 Mar 1;22(1):15-21.