Type-2 Diabetes Mellitus Individuals Carry Different Periodontal Bacteria

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PESQUISA BRASILEIRA EM ODONTOPEDIATRIA E CLINICA INTEGRADA

Volume: 21

Article Number: e0107

DOI: 10.1590/pboci.2021.049

Published: 2021

Document Type: Article

Abstract

Objective: To identify etiologic microbiota associated periodontal diseases among diabetes patients and the factors related to the most commonly identified bacteria species. Material and Methods: Periodontal plaque samples from 11 diabetic participants and 13 non-diabetic controls were collected to assess their aerobic and anaerobic bacterial growth. Different distinct colonies were identified by microscopic and 16srDNA sequencing. Pearson's chi-square tests were conducted to examine any association between categorical variables. Results: The diabetic subjects revealed a more intense plaque formation with a mean plaque index of 2.4 compared to 1.8 in non-diabetics. A total of 86 bacteria were isolated from 24 plaque samples, 44 were aerobic, and 42 were anaerobic. Only aerobic isolates, 22 from diabetic patients and 22 from non-diabetic patients, were evaluated in these analyses. Bacillus spp. (B. cereus mainly) and Klebsiella spp. (K. pneumoniae, K. aerogenes, K. oxytoca) were detected markedly higher in non-diabetic individuals than in diabetic subjects (p=0.026 and p=0.021, respectively). Some bacteria were only identified in the dental plaque of diabetic individuals, namely, Bacillus mojavensis, Enterobacter cloacae, Proteus mirabilis, Staphylococcus epidermidis, Staphylococcus hominis, Staphylococcus pasteuri, Streptococcus mutans, and Streptococcus pasteurianus. The presence of acid reflux and jaundice were significantly associated with the most common bacterial isolate, namely Bacillus spp., with the p-values of 0.007 and 0.001, respectively. Conclusion: Type-2 diabetes mellitus is associated with a higher amount of dental plaques. Periodontal plaque samples from diabetic and non-diabetic subjects possess differential microbial communities. Diabetic plaques contain more versatile microbes predominated by gram-positive streptococci and staphylococci.

Keywords

Author Keywords: Oral Health; Periodontal Diseases; Periodontitis; Diabetes Mellitus; Type 2

Keywords Plus: MICROBIOLOGICAL CHARACTERISTICS; BACILLUS-CEREUS; DISEASE; ASSOCIATION; POPULATION; VIRULENCE; BIOFILM; HEALTHY

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PESQUISA BRASILEIRA EM ODONTOPEDIATRIA E CLINICA INTEGRADA

ISSN: 1519-0501

eISSN: 1983-4632

Current Publisher: ASSOC APOIO PESQUISA & SAUDE BUCAL-APESB, AGENCIA CIDADE UNIV, UNIV FEDERAL PARAIBA, CAMPUS I, JOAO PESSOA, PB 58051-970, BRAZIL

Research Areas: Dentistry, Oral Surgery & Medicine

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