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Relationship between cytokine pattern and lipopolysaccharides of diabetics and normoglycemics: a case-control study

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Abstract

Periodontitis is an inflammatory disease with a multifactorial etiology, triggered by the host's immune-inflammatory response to the periodontopathogens, manly gram-negative bacteria, present in the subgingival biofilm. Systemic conditions, such as diabetes mellitus (DM), can alter this response through immunological and microbiological changes. Studies have shown that DM promotes a dysbiotic pattern of biofilm, which may alter endotoxin content in the subgingival environment. Thus, the present study aims to evaluate the relationship between cytokine profile and lipopolysaccharide levels in the subgingival environment of diabetic and non-diabetic subjects.

Key words:

Periodontitis, diabetes mellitus, lipopolysaccharides.

Introduction

Periodontitis is an inflammatory disease of multifactorial etiology, resulting if untreated in tooth loss. Systemic conditions such as diabetes mellitus (DM) can alter its severity and progression. Studies have shown that DM promotes a dysbiosis pattern of biofilm, through higher number of gram-negative bacteria which may change endotoxin content in the subgingival environment resulting in a faster periodontal destruction.

Results and Discussion

We selected 30 patients, 15 patients diagnosed with type 2 DM at least 2 years and 15 normoglycemics, all diagnosed with generalized severe chronic periodontal disease. Gingival crevicular fluid were collected to endotoxin lipopolysaccharides (LPS), cytokines and metalloproteinases analysis.

On DM group presented high levels of LPS in the subgingival environment (292,3 ± 282,2) , when compared with normoglycemic ones (26,8 ± 16,2) ($p<0.05$) and in relation to the levels of cytokines, individuals with DM presented higher levels of IL-17 , IL-1β and MMP-2 ($p<0.05$), than normoglycemics. Correlation was performed, showing a modulation of IFN-γ (0.538(0.04)), IL- (0.820(<0.0001)), and MMP-2 (0.880(<0.0001)), while negatively modulating IL-10 (-0.798(<0.001)) in DM group. This correlation was not seen in normoglycemic group.

Figure 1- Concetration of LPS (EU/mL) in subgingival samples from individuals whit DM and normoglycemia

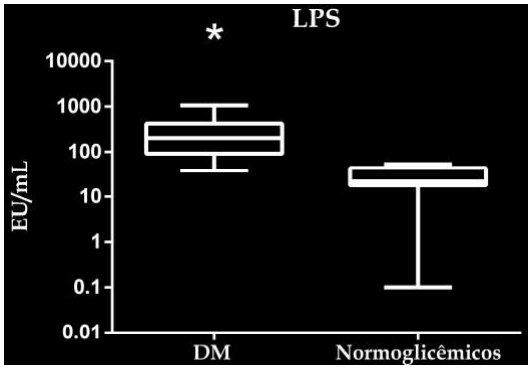

Table 1.Correlation (r(p)) between cytokines/proteases and LPS/LTA levels in diabetic and normoglycemic subjects.

	Diabetes	Normoglycemic
IFN-γ (pg/mL)	0.538(0.04)	0.042(0.88)
IL-10 (pg/mL)	-0.798(<0.001)	-0.323(0.25)
IL-17 (pg/mL)	0.820(<0.0001)	0.231(0.42)
IL-1β (pg/mL)	-0.112 (0.69)	0.169(0.55)
IL-4 (pg/mL)	0.288 (0.30)	-0.094(0.738)
MMP-2 (pg/mL)	0.880(<0.0001)	0.202(0.47)
MMP-9 (pg/mL)	-0.020 (0.92)	-0.059(0.83)

Conclusions

Diabetic patients had a higher local level of LPS than normoglycemics. In addition to these elevated levels, in diabetic patients, LPS demonstrated the modulation of different cytokines, suggesting a change of modulation due hyperglycemic environment, positively modulating IFN- γ, IL-17 and MMP-2 while negatively modulating IL-10.

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Armitage GC. Development of a classification system for periodontal diseases and conditions. Ann Periodontol. 1999 Dec;4(1):1-6. Review.

Bartold PM, Van Dyke TE. Periodontitis: a host-mediated disruption of microbial homeostasis. Unlearning learned concepts. Periodontol 2000. 2013 Jun;62(1):203-17.

Yoshioka H, Yoshimura A, Kaneko T, Golenbock DT, Hara Y. Analysis of the activity to induce toll-like receptor (TLR)2- and TLR4-mediated stimulation of supragingival plaque. J Periodontol. 2008 May;79(5):920-8.