

Dynamics of colonization by *Aggregatibacter actinomycetemcomitans* in aggressive periodontitis families: Case-control-study.

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Abstract

Aggressive periodontitis (AgP) is a disease characterized by the presence of periodontal pathogens and family aggregation of cases, possibly related to the vertical transmission of microorganisms. Thus, the project has evaluated the pattern of colonization of some pathogens in children of parents affected by generalized aggressive periodontitis, compared to children of periodontally healthy parents. Five edentulous babies and 15 primary, mixed and permanent dentate children from families with parents affected by AgP were selected and, by a age and gender-matched approach, similar population from periodontally healthy individuals were also selected. From all subjects, saliva was collected, had a DNA extracted and sequenced for *Aggregatibacter actinomycetemcomitans* (Aa), *Porphyromonas gingivalis* (Pg), *Treponema denticola* (Td), *Tannerella forsythia* (Tf) identification. Results showed a higher prevalence in AgP-family children regarding Td and Tf. *denticola* in mixed and permanent dentition ($p < 0.05$). In conclusion, the presence of disease in parents negatively affect the oral microbiota of their descendants.

Key words:

Aggressive Periodontitis, Microbiology, Vertical transmission.

Introduction

• Aggressive periodontitis (AgP) is an immunoinflammatory disease of the periodontium that affects young and systemically healthy individuals¹.

• The familial aggregation is an important characteristic of AgP and this can be associated to vertical transmission of microorganisms, genetic factors related to immunoinflammatory response and to susceptibility to disease.^{2 3 4}

• The general objective of the research project was to evaluate the dynamics of colonization by Aa and other pathogens in the saliva of children and adolescents (children 0 to adults up to 18 years old) belonging to families with a history of aggressive periodontitis, comparing the children of healthy periodontal families.

Results and Discussion

-*Aggressive group*: Families that (or at least one of the spouses) with aggressive periodontitis and have at least 01 child aged 0 to 18 years.

-*Health group*: Families who both parents have periodontal health and have a child aged 0 to 18 years.

- Saliva samples were collected, DNA extracted from it, 16S-Illumina MiSeq Gene Sequencing was ligated.

Table 1 shows characteristics such as gender and age of the population of our sample, in the health and aggressive groups, confirming similar distribution ($p > 0.05$).

Chart 1 shows the presence of pathogens in each dentition in the different groups. Especially in the mixed and permanent dentitions the largest of these microorganisms is observed, being the aggressive group the most affected ($p < 0.05$).

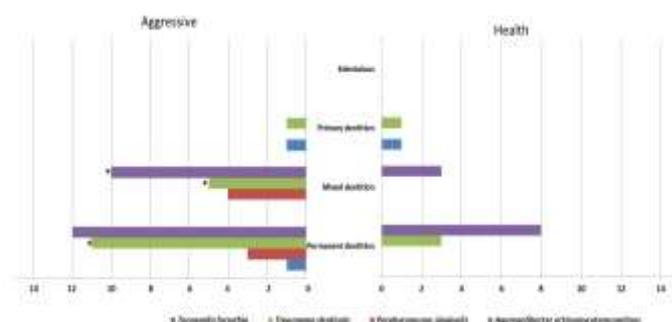


Chart 1. Presence of pathogens *Aggregatibacter actinomycetemcomitans*, *Porphyromonas gingivalis*, *Treponema denticola*, *Tannerella forsythia* in the different dentitions of the health and aggressive groups.

Table 1. Clinical and demographic data of patients included in the study.

		Aggressive	Health
Edentulous	Age (mean± sd)	02m ± 1	1,6m ± 1,3
	Gender (% - M/F)	66,6 / 33,3	80,0 / 20,0
Primary	Age (mean± sd)	2,9y ± 1,1	3,2y ± 1,3
	Gender (% - M/F)	50,0 / 50,0	50,0 / 50,0
Mixed	Age (mean± sd)	9,6y ± 1,8	9,6y ± 1,6
	Gender (% - M/F)	40,0 / 60,0	40,0 / 60,0
Permanent	Age (mean± sd)	15,7y ± 1,6	15,2y ± 1,5
	Gender (% - M/F)	26,7 / 73,3	30,8 / 69,2

Conclusions

In conclusion, the presence of disease in parents negatively affect the oral microbiota of their descendentes.

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¹ Armitage GC. Development of a classification system for periodontal diseases and conditions. *Ann Periodontol.* 1999 Dec;4(1):1-6.; ²Feng X, Zhu L, Xu L, Meng H, Zhang L, Ren X, et al. Distribution of 8 periodontal microorganisms in family members of Chinese patients with aggressive periodontitis. *Arch Oral Biol.* 2015; 60(3):400-7.; ³ Könönen E, Müller HP. Microbiology of aggressive periodontitis. *Periodontol* 2000. 2014; 65(1):46-78; ⁴Monteiro MF, Casati MZ, Taiete T, Sallum EA, Nociti-Jr FH, Ruiz KG, et al. Salivary carriage of periodontal pathogens in generalized aggressive periodontitis families. *Int J Paediatr Dent.* 2014;24(2):113-21.