

Scientific release from the EFP
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Study:



The JP2 genotype of *Aggregatibacter Actinomycetemcomitans* and marginal periodontitis in the mixed dentition

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Relevant background to study:

An association between the presence of the JP2 clone of *Aggregatibacter Actinomycetemcomitans* (*Aa.*) and an elevated risk of developing aggressive periodontitis has been established. The JP2 genotype is endemic in various populations

originating in north and central African countries. However, only a few studies have focused on the presence of the JP2 genotype of *Aa.* and its potential association with the initiation of periodontal disease in the mixed dentition.

Study aims:

The aim of this cross-sectional study was to determine the carrier rate of the JP2 and non-JP2 genotype of *Aa.* among 7-10 year-old Moroccan children and to correlate the findings with clinical attachment loss (CAL) in the mixed dentition.

Methods:

The study included 513 Moroccan children around 8 years of age. Subgingival plaque samples were collected using a sterile absorbent paper point from four periodontal sites, preferentially from primary first molars. Samples were processed and analysed by PCR for the presence of the JP2 and non-JP2 genotypes of *Aa.*
The cut-off point for being considered as having periodontitis was presence of at least two sites with CAL equal to or greater than 3 mm. Bitewing radiographs were taken and radiographic bone loss

(RBL) was considered as present when more than 2 mm of bone loss was evident from the CEJ to the alveolar bone crest. If two or more sites had radiographic bone loss above 2 mm, the subject was considered as having bone loss.
75 children who were in the mixed dentition were clinically and radiographically examined: 29 children tested positively for the JP2 genotype, 22 children were non-JP2 genotype-positive, and 24 children were negative for *Aa.*

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Results:

- Carrier frequency of JP2 and non-JP2 genotypes of *Aa.* among 513 screened children:
 - 46 subjects (9%) were positive for the JP2 genotype.
 - 186 (36,3%) subjects were positive for non-JP2 genotypes.
 - 281 subjects (54,8%) were negative for the presence of *Aa.*
 - 5 children (6,7%) had CAL ≥ 3 mm at two or more sites. All of these children were with a mixed dentition and JP2 genotype positive. In the group of non-JP2 genotype volunteers and the group without *Aa.*, no CAL was found. The difference between groups did not reach statistical significance.
- Radiographic bone loss was found in all 3 groups, but most prominently in the JP2 genotype positive group. Out of 64 children, 8 presented RBL of more than 2 mm at 2 or more primary dentition sites, and 6 of them were JP2 genotype-positive.
- As for permanent molars, in the 75 children who were in their mixed dentition, clinical examination demonstrated no volunteers with a minimum number of 2 sites with CAL ≥ 3 , nor RBL > 2 mm at two sites.

**Limitations,
conclusions
and impact:****Limitations:**

The principal limitation of this study is the difficulty in diagnosing periodontal disease in the mixed dentition. Exfoliating and erupting neighbouring teeth may cause false pockets or "pseudomeasurements" of CAL. Clinical examination revealed a lower prevalence of attachment loss (6,7%) compared to findings obtained by radiographic examination (12,5%).

Conclusions:

This study demonstrates that a substantial proportion (9%) of 7- to 10-year-old Moroccan children are carriers of the highly leukotoxic JP2 genotype of *Aa.* Moreover, the presence of CAL was found only in the *Aa.* JP2-positive group. The result was not statistically significant, presumably due to the relatively small study population.

Impact:

Signs of marginal periodontitis are already evident in the mixed dentition. For accurate diagnosis, it is preferable to combine both clinical and radiographic examinations.

The JP2 genotype of *Aggregatibacter Actinomycetemcomitans* may be a risk factor for periodontal disease in adolescents. In specific populations from a geographical or ethnic background with a higher potential prevalence of the JP2 clone (even if not living in Africa), microbiological tests may be helpful to identify higher risk patients in whom preventive treatment could be provided more intensely or methods developed to prevent vertical transmission.