Periodontal Diseases in Children and Adolescents
Does it Exit Anymore?

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Department of Dentistry and Oral Health,
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Denmark
My sincere thanks go to the organization of IAPD tri-regional conference 2019 for inviting me to this meeting.
Comments often heard in dental clinics ...........

• Periodontitis in children and adolescents - Does it exist? I never see it in clinic!

• Is it possible to obtain control of destructive periodontal disease?

• I don’t know what to do about it?
Renewed focus is needed

The ethnic composition of populations in countries change due to human migration.

**Periodontal status of 14-16 year-old Danish schoolchildren.**

**Authors**
Hoover JN, Ellegaard B, Attström R.

**Citation**

**Abstract**
The purpose of this study was to determine the prevalence of periodontal disease in teenagers. The survey was conducted on 325 children aged 14, 15 and 16 years, living in Aarhus, Denmark. Pocket depth and loss of attachment were mea

**Radiographic and clinical examination of periodontal status of first molars in 15-16-year-old Danish schoolchildren.**

**Show full citation**

**Abstract**
The prevalence of alveolar bone loss was investigated in 2813, 15- and 16-year-old Danish schoolchildren using bitewing radiographs. The interproximal spaces of the mesial and distal aspects of the first molar teeth were examined. Only defects with depths of more than 2 mm were considered periodontal bone loss.

**The field may be overlooked or ‘forgotten’ in pediatric dental practice (and maybe in other types of practices)**

**Why?**
14-yr old Danish boy with periodontitis

Bone loss:
16, 15, 25, 26, 42, 41, 31, 32
Children and adolescents

Periodontology - gingivitis and periodontitis

Oral Biology

Pediatric Dentistry

Epidemiology

Oral mucosal lesions

Cooperation of the child is important, but often a challenge
More than 20 years of research on periodontal diseases in children and adolescents, particularly focused on African countries:

- **Morocco, North Africa (1998-)**
- **Ghana, West Africa (2008-)**
- **Kenya, East Africa (2015-)**
Disposition

1. Prevalence of marginal periodontitis in children and adolescents worldwide
2. Challenges in diagnosing marginal periodontitis and understanding the etiology
3. *Aggregatibacter actinomycetemcomitans* (Aa) - virulence factors
4. Highly leukotoxic types of Aa associated with clinical attachment loss
5. Geographic dissemination of highly leukotoxic Aa-mutant (JP2 genotype of Aa)
6. Clinical implications
Prevalence of aggressive periodontitis

The condition is apparently rare

- but is the prevalence the same in all parts of the world and in all populations?
Prevalence of aggressive periodontitis in children and adolescents worldwide

Conclusion: The prevalence of periodontitis in American teenager cohorts varies, but is highest in black Americans.
Prevalence of aggressive periodontitis in children and adolescents worldwide

Conclusions

- Significant health problem in certain populations
- Lack of information on the epidemiology in many parts of the world
- Further information is needed to establish effective health promotion measures

Epidemiology and demographics of aggressive periodontitis

Cristiano Susin, Alex N. Haas & Jasim M. Albandar
Challenges in diagnosing aggressive periodontitis and understanding the etiology in the young

A variety of gingival and periodontal conditions exists combined with oral mucosal lesions
What is the problem?
Normal and healthy gingival and periodontal conditions orally

Oral self-inflicted mutilation
Foreign bodies implicated in periodontal lesions

Figure. Foreign body (a plastic ring or rubber band from children’s toys) in the oral cavity of a 6-month old baby.
(a) Blue plastic ring/rubber band around tooth 72; (b) Blue plastic ring around the column of tooth 72 after extraction.
Foreign bodies in the oral cavity of very young children are rare and difficult to diagnose

A. B. Grønbæk • S. Poulsen

Dear Editor,

It is with interest that we read the case report “A foreign body in disguise” (Leith and O’Connell 2013), because we published a similar case in a national dental journal in 2004 (Grønbæk 2004). Our case was a 14-month-old boy, who presented with a 72 which appeared with a strange blue colour, but otherwise asymptomatic (Fig. 1). At follow-up 6 months later, the blue collar was localised along the gingival margin, while the incisal part of the crown had normal colour. The tooth was now slightly elongated, lingually displaced (Fig. 2), and loose with grade 2 mobility. There was redness and swelling of the buccal gingiva. Radiographic examination showed extensive, vertical bone-loss around 72, extending until 2 mm from the apex, but no foreign body or object, which could explain the condition. After extraction, we found a blue plastic band around the column of the tooth (Fig. 3).

We were not able to identify the object with certainty, but it seemed compatible with a piece of insulation from an electric wire as suggested in two of the previous reported cases (Wellins 1980; Manakou et al. 2004). In contrast to previous reports (Wellins 1980; Manakou et al. 2004; Leith and O’Connell 2013), radiographic examination did not aid in the diagnosis in this case.

![Clinical photograph at the initial examination at 14 months of age](image1)

![Clinical photograph 6 months after the initial examination](image2)

- The cases are presumably rare,
- but may be difficult to diagnose.
- Due to the age group usually affected, being children <3 years of age, paediatric dentists should be aware of this condition.
Foreign bodies implicated in periodontal lesions
Tooth anomalies is a challenge to the periodontium

What to do?
• Nothing?
• Extraction and
  - orthodontic treatment?
  - insertion of an implant?
Gingival hyperplasia related to orthodontic treatment
Morbus Crohn’s disease
Challenges in diagnosing periodontitis and understanding the etiology in the young

**Conclusion:**
- A variety of gingival and periodontal conditions and oral mucosal lesions are found in children and adolescents.
- Be careful and use all your knowledge to get through the differential diagnostic phase.
Why study aggressive periodontitis in African teenagers?
Dental plaque

Are the constituents of dental plaque identical in all patients from all parts of the world?
Dental plaque

Numerous microorganisms in dental plaque

Aggregatibacter actinomycetemcomitans

Rough and smooth types of A. actinomycetemcomitans
What is the JP2 clone of Aa?

- DNA-based detection of bacterial species
- DNA-based detection of subtypes within each bacterial species
- Microevolution of subtypes/clones
- Full-genome sequencing of microbiomes

The amount of information is increasing

Not only dealing with bacterial species, but also bacterial clones and subtypes/phylotypes!

Virulence factors of *A. actinomycetemcomitans*

- Leukotoxin (ltx)
- Cytolethal distending toxin (cdt)
- LPS
- Adhesins
- Bacteriocins

<table>
<thead>
<tr>
<th>Strain Y4 (non-JP2 genotype)</th>
<th>HK1519 (JP2 genotype)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low leukotoxic</td>
<td>Highly leukotoxic</td>
</tr>
</tbody>
</table>

Phagocytosis when the bacteria/PMNL ratio was 25/1 and the incubation time 10 min.

Johansson et al. 2000
Aa – JP2 genotype - leukotoxin

530 bp-deletion in the promoter region of the leukotoxin gene operon of the JP2 genotype

Aa-genotype (non-JP2)

JP2 genotype of Aa

Significantly increased leukotoxin production
Background information

The prevalence of aggressive periodontitis is high in Africa.

The prevalence of the JP2 clone of Aa with increased leukotoxin production is endemic in Northwest Africa.

Leukotoxin kills important cells of the immune defense.

The JP2 clone strains can be isolated from African immigrants living in different parts of the world (human migration).

Originally, strain JP2 was isolated from an 8-year old African-American child with prepubertal periodontitis. (Tsai et al., Infect & Immun 1984)
Hypotheses from the 1990’s

Presence of the JP2 genotype of Aa is strongly associated with periodontal attachment loss.

The JP2 genotype of Aa has emerged as a distinct genotype at the African continent and has disseminated from this continent to other parts of the World.

Population-based longitudinal study

Study population
700 adolescents
mean age: 12.6 yrs
examined at 11 schools
in Rabat, Morocco

Methods
• Clinical examination
• Plaque sampling

Identification of *A. actinomycetemcomitans* by PCR
Relative risks for CAL ≥ 3 mm according to baseline carrier status of JP2 and non-JP2 clones of Aa

<table>
<thead>
<tr>
<th>Carrier status of Aa at baseline</th>
<th>CAL ≥ 3 mm at 2-yr follow up</th>
<th>Crude RR, 95 % CI</th>
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<tbody>
<tr>
<td>JP2   non-JP2</td>
<td>Yes   No</td>
<td></td>
</tr>
<tr>
<td>+     +</td>
<td>13     14</td>
<td>12.4 (5.2-29.9)</td>
</tr>
<tr>
<td>+     -</td>
<td>16     7</td>
<td>18.0 (7.8-41.2)</td>
</tr>
<tr>
<td>-     +</td>
<td>26     197</td>
<td>3.0 (1.3-7.1)</td>
</tr>
<tr>
<td>-     -</td>
<td>6      149</td>
<td>1.0 reference</td>
</tr>
</tbody>
</table>

Conclusions

The JP2 clone of Aa is likely to be an important etiological agent in initiation of periodontal attachment loss in children and adolescents

At baseline: **500** Ghanaian adolescents in 2009 (mean age: 13.2 yrs)
At 2-yr follow-up: **397** adolescents (79.4%)
Geographic dissemination of the JP2 clone of Aa

Human beings carry a "fingerprint" of themselves in terms of a "DNA-fingerprint" of the bacterial species in dental plaque
Moroccan family living in Denmark
Mother, father and 5 children (two severely diseased)
Better oral hygiene is needed
Early diagnosis

29 yr old Moroccan female
PREVENTION

• Early detection of initiating periodontal lesions
• Information and intensive oral hygiene program/monitoring
• Microbiological testing (in some cases)
• Periodontal therapy supplemented by use of antibiotics, if needed

Important to remember:
How to handle JP2 clone infection in families? Possibility of transmission in close relationships
Diminished Treatment Response of Periodontally Diseased Patients Infected with the JP2 Clone of Aggregatibacter (Actinobacillus) actinomycetemcomitans

Sheila Cavalca Cortelli, Fernando Oliveira Costa, Toshihisa Kawai, Davi Romeiro Aquino, Gilson Cesar Nobre Franco, Kazuhisa Ohara, Caio Vinicius Gonçalves Roman-Torres, and José Roberto Cortelli

Department of Periodontology, Dental Research Division, University of Taubaté, Taubaté, SP, Brazil; Department of Periodontology, Dental Research Division, Federal University of Minas Gerais, Belo Horizonte, MG, Brazil; Department of Immunology, Forsyth Institute, Boston, Massachusetts; and Department of Oral Biology, Dental Research Division, University of Taubaté, Taubaté, SP, Brazil

Received 15 February 2009/Returned for modification 6 May 2009/Accepted 13 May 2009

This longitudinal study evaluated the response to periodontal treatment by subjects infected with either JP2 (n = 25) or non-JP2 (n = 25) Aggregatibacter (Actinobacillus) actinomycetemcomitans. Participants were treated during the first 4 months by receiving (i) scaling and root planing, (ii) systemic antibiotic therapy, and (iii) periodontal surgery. Probing depth (PD), clinical attachment level (CAL), and gingival and plaque indices (GI and PI, respectively) were monitored at baseline and at 12 months, along with DNA-PCR-based subgingival detection of JP2 or non-JP2 A. actinomycetemcomitans. At baseline, PD, CAL, and GI scores were statistically higher in the JP2 strain-positive group than the non-JP2-strain-positive group. At 12 months, PD, CAL, and GI scores had decreased significantly for both groups, but the reduction rates of PD and CAL were higher in the non-JP2-strain-positive group. Among JP2-strain-positive patients in the baseline, patients who remained JP2 strain positive at 12 months showed significantly higher GIs than did the patients who had lost the detectable JP2 clone. Patients who remained JP2 strain positive at 12 months appeared to be more resistant to mechanical-chemical therapy than did those who were still non-JP2 strain positive, while the elimination of JP2 A. actinomycetemcomitans remarkably diminished gingival inflammation. Early identification and elimination of the JP2 clone of A. actinomycetemcomitans will enable practitioners to effectively predict the outcome of treatments applied to periodontal patients.
Non-Surgical Therapy Reduces Presence of JP2 Clone in Localized Aggressive Periodontitis

Danielle K Burgess, MS*, Hong Huang, BS†, Peter Harrison, MS†, Theodora Kompotiati, DDS, MS, Ikramuddin Aukhil, MS†, and Luciana M Shaddox, DDS, MS, PhD

*University of North Carolina School of Dentistry, Chapel Hill, North Carolina, United States
†Department of Periodontology, University of Florida College of Dentistry, Gainesville, Florida, United States
‡Division of Periodontology, School of Dental Science, Trinity College Dublin, Ireland

CONCLUSIONS

This study showed that mechanical periodontal therapy with a single regimen of amoxicillin and metronidazole was successful in reducing and maintaining a low rate of detection of JP2 in diseased and healthy sites of African Americans diagnosed with LAP, along with a significant reduction and stability of clinical parameters of the disease, 12 months post-therapy.
Male, living in Sweden since 4-yr of age, originates from Cape Verde Islands

JP2 clone positive

Kvist, 2012 (unpublished data)
14-yr old girl from Sudan, living in Denmark for the last 7 years

Positive for non-JP2 genotype of Aa
14-yr old girl from Sudan, living in Denmark for the last 7 years
Male, originating from Cape Verde

- 18-yr old man, medically health
- Living in Sweden since 4-yr of age
- Youngest sibling out of four
- Parents from Cap Verde Islands
- Parents have lost teeth due to periodontitis

<table>
<thead>
<tr>
<th>Tooth no.</th>
<th>Pocket depth (mm)</th>
<th>Bleeding</th>
<th>Mobility</th>
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<tbody>
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<td></td>
<td>mb  b  db ml l dl</td>
<td></td>
<td></td>
</tr>
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</tr>
<tr>
<td>11</td>
<td>8 6 8</td>
<td>all</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>6 6 6</td>
<td>all</td>
<td>2</td>
</tr>
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<td>26</td>
<td>12 7 7 12 12 11</td>
<td>all</td>
<td>1-2</td>
</tr>
<tr>
<td>36</td>
<td>10 7 7 9 6 7</td>
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<td>1</td>
</tr>
<tr>
<td>32</td>
<td>4 4</td>
<td>all</td>
<td>1</td>
</tr>
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<td>42</td>
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<td>all</td>
<td>3</td>
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<tr>
<td>46</td>
<td>8 5 5 10 10 10</td>
<td>all</td>
<td>1-2</td>
</tr>
<tr>
<td>47</td>
<td>5 5</td>
<td>all</td>
<td></td>
</tr>
</tbody>
</table>
Upper and lower incisor region

Upper and lower molar regions
Male, living in Sweden since 4-yr of age, originates from Cape Verde Islands

Kvist et al., unpublished data
Etch bridge inserted after extraction of lower incisors due to severe bone loss

Baseline

2 months after insertion of the bridge
After treatment
Comments often heard in dental clinics............

• **Does it exist? I never see it in clinic!**
  Yes, but you have to look for it to be able to see it!

• **Is it possible to obtain control of destructive periodontal disease?**
  Yes, and often the response is very good in the young

• **I don´t know what to do about it?**
  There is a need for more information both about biological and clinical aspects within this challenging field.
In collaboration with researchers from:

**Department of Medical Microbiology & Immunology and Oral Biology**
University of Aarhus, Denmark
University of Göteborg, Sweden
Aarhus University Hospital, Denmark

**Departments of Periodontology**
University of Copenhagen, Denmark
University of Rabat, Morocco
University of Accra, Ghana
University of Umeå, Sweden
University of Nairobi, Kenya

**Department of Biostatistics**
University of Aarhus, Denmark
University of Umeå, Sweden

**Department of Paediatric Dentistry**
Karolinska, University of Stockholm, Sweden
University of Aarhus, Denmark
Thank you for your attention!

Aarhus University, Denmark
Diminished treatment response of periodontally diseased patients infected with the JP2 clone of Aa

This longitudinal study evaluated the response to periodontal treatment by subjects infected with either JP2 ($n = 25$) or non-JP2 ($n = 25$) Aa.

Participants were treated during the first 4 months by receiving (i) scaling and root planing, (ii) systemic antibiotic therapy, and (iii) periodontal surgery.

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- Patients who remained JP2 strain positive at 12 months appeared to be more resistant to mechanical-chemical therapy than did those who were still non-JP2 strain positive, while the elimination of JP2 Aa remarkably diminished gingival inflammation.

## Relative risk

*Morocco: Haubek et al. (The Lancet 2008)*

<table>
<thead>
<tr>
<th>JP2</th>
<th>non-JP2</th>
<th>CAL ≥ 3mm</th>
<th>CAL &lt; 3mm</th>
<th>Crude RR</th>
<th>95% CI</th>
</tr>
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<tbody>
<tr>
<td>+</td>
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<td>13</td>
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<td>12.4</td>
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<td>-</td>
<td>6</td>
<td>149</td>
<td>1.0</td>
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</table>

61/428 (14.3%)

*Ghana: Höglund Åberg et al. (J. Periodontal Res 2011)*

<table>
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<tr>
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<th>non-JP2</th>
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<th>CAL &lt; 3mm</th>
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<th>95% CI</th>
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<tr>
<td>+</td>
<td>+</td>
<td>12</td>
<td>3</td>
<td>7.6</td>
<td>(4.5-12.7)</td>
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<tr>
<td>+</td>
<td>-</td>
<td>11</td>
<td>4</td>
<td>7.0</td>
<td>(4.1-12.0)</td>
</tr>
<tr>
<td>-</td>
<td>+</td>
<td>47</td>
<td>76</td>
<td>3.6</td>
<td>(2.2-6.0)</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>17</td>
<td>145</td>
<td>1.0</td>
<td>reference</td>
</tr>
</tbody>
</table>

87/315 (27.6%)
Geographic dissemination of the JP2 clone

- **Endemic presence** of the JP2 genotype of Aa in:
  - **North Africa** *(Morocco, Algeria)* (Haubek, 2010)
  - **West Africa** *(Ghana, Cape Verde Islands)* (Haubek et al. 1997, Åberg et al. 2012)
  - **East Africa** *(Sudan, Kenya, Tanzania)* (Elamin et al. 2011; Haubek et al. 1996, 1997) (in 2015, a single subject from Sudan was found to be positive, Elabdeen et al. 2015; recently very few Kenyan adolescents were positive for JP2)

- **Dissemination** of the JP2 genotype of Aa to:
  - **Europe** *(Germany, Sweden, Denmark, Switzerland, Portugal)* (Macheleidt et al. 1999, Haubek et al. 2006; Claesson et al. 2010)
  - **Middle East** *(Turkey, Israel, Iraq)* (Haubek, 2010)
  - **South America** *(Brazil)* (Tinoco et al. 1997, Saddi-Ortega et al. 2002; Cortelli et al. 2003, 2005; Wahasugui et al. 2012)

- **No indication** of the presence of the JP2 genotype of Aa in:
  - **Asia** *(China, Japan, Thailand)* (Mombelli et al. 1999; He et al. 1999, Tan et al. 2001; Leung et al. 2005; Bandhaya et al. 2012)
  - **Australia**
JP2 clone carriers among healthy, L-AGP and G-AGP

Principal findings: The JP2 clone is very strongly associated with severe aggressive periodontitis among young adults in Morocco. No significant difference in the prevalence of the JP2 clone among L-AgP and G-AgP patients was found.

Practical implications: The high prevalence of the JP2 clone of *A. actinomycetemcomitans* in AgP patients in this population has implications for preventive and therapeutic approaches in both L-AgP and G-AgP.

Diminished treatment response of periodontally diseased patients infected with the JP2 clone of Aa

- Among JP2-strain-positive patients in the baseline, patients who remained JP2 strain positive at 12 months showed significantly higher GIs than did the patients who had lost the detectable JP2 clone.

- Patients who remained JP2 strain positive at 12 months appeared to be more resistant to mechanical-chemical therapy than did those who were still non-JP2 strain positive, while the elimination of JP2 Aa remarkably diminished gingival inflammation.
Warbergaia ugandensis
Chewing sticks from different plants are used as oral hygiene tools to maintain good oral hygiene in many populations.

Chewing stick  56.4%
Toothbrush & paste  99.7%
To examine the effects of chewing stick extracts on A. actinomycetemcomitans

Hypothesis: Plants contain ingredients that may be associated with positive health effects

Guava is used in folk medicine

Anti-inflammatory and/or anti-microbiel effects?

Hypothesis: Plants contain ingredients that may be associated with positive health effects
**Effect of A. actinomycetemcomitans on leukotoxicity**

One (Guava) out of 7 plant extracts that have been tested, *Inhibited leukotoxin-induced lysis of cells*

*Kwamin et al., BMC Research Notes, 2012*
Guava mouth rinse?

Clinical trial – analysis and the results are awaiting our attention
Collection of biological samples in Maasai Mara, Kenya

- Dental plaque samples from all participants
  - analysis by conv. PCR and real-time PCR
- Saliva samples from all participants
  - analyses of biomarkers
Oral hygiene habits

Kenian types of chewing sticks.

The wood (bark) from plants releases substances that neutralize leukotoxin from Aa.
Human migration out of Africa in several directions

Human beings carry a "fingerprint" of themselves in terms of a "DNA-fingerprint" of the bacterial species in dental plaque
Constituents of dental plaque

*Before*
Culture-based detection of around 300 bacterial species

*Later*
DNA-based detection of more than 700 bacterial species

*Now*
DNA-based detection of subtypes of bacterial species
- unknown, but very high number of subtypes
Ghana results

Baseline

Individuals lost at follow-up

n=103

n=78  healthy

n=25  diseased

Participants in the follow-up

n=397

n=315  healthy

n=82   diseased

2-year follow-up

n=228  healthy

n=87   diseased

n=13   remission

n=69   diseased

N=315; 2-yr follow-up
Host tropism?

Dissemination of the JP2 clone is restricted to close contacts
Detection of JP2 and non-JP2 genotypes of Aa in clinical samples referred to the microbiological laboratory in Umeå Dental School, Sweden

<table>
<thead>
<tr>
<th>Sample no.</th>
<th>Gender</th>
<th>Age</th>
<th>Origin</th>
<th>% Aa in dental plaque</th>
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<tbody>
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<td>M</td>
<td>43</td>
<td>N. Africa</td>
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<td>2</td>
<td>F</td>
<td>33</td>
<td>Sweden</td>
<td>78</td>
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<tr>
<td>3</td>
<td>F</td>
<td>63</td>
<td>Sweden</td>
<td>+</td>
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<td>F</td>
<td>30</td>
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<td>7</td>
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<td>9</td>
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<td>10</td>
<td>M</td>
<td>19</td>
<td>Gambia</td>
<td>0.05-62</td>
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</table>

**Conclusion**: The highly leukotoxic JP2 clone strains of Aa seem to be more spread among individuals of non-African origin than earlier reported

*Claesson et al. (in preparation)*
Age and colonization with the JP2 clone

**Prevalence of Highly Leukotoxic A. actinomycetemcomitans in LJP Patients**

<table>
<thead>
<tr>
<th></th>
<th>≤14 Years</th>
<th>&gt;14 Years</th>
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<tbody>
<tr>
<td>N subjects</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>N (%) positive subjects</td>
<td>30 (81)</td>
<td>9 (26)*</td>
</tr>
<tr>
<td>Number of isolates</td>
<td>406</td>
<td>150</td>
</tr>
<tr>
<td>N (%) positive isolates</td>
<td>291 (72)</td>
<td>115 (76)</td>
</tr>
</tbody>
</table>

* z = 4.77, P < 0.001.

Haraszthy et al. J Periodontol 2000
JP2 genotype of Aa also among patients
gen generalized aggressive periodontitis?

<table>
<thead>
<tr>
<th>JP2 genotype</th>
<th>Healthy</th>
<th>Localized aggressive periodontitis</th>
<th>Generalized aggressive periodontitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aa genotype carrier status</td>
<td>23 (100%)</td>
<td>3 (7.2%)*</td>
<td>9 (31.0%)*</td>
</tr>
<tr>
<td>Non-JP2 genotypes alone</td>
<td>0 (0%)</td>
<td>4 (9.8%)†</td>
<td>0 (0%)†</td>
</tr>
<tr>
<td>JP2 clone alone</td>
<td>0 (0%)</td>
<td>30 (73.2%)‡</td>
<td>14 (48.3%)‡</td>
</tr>
<tr>
<td>Co-presence of JP2 and non-JP2 genotypes of Aa</td>
<td>0 (0%)</td>
<td>4 (9.8%)ǂ</td>
<td>6 (20.7%)ǂ</td>
</tr>
</tbody>
</table>

\*P = 0.009, †P = 0.83, ‡P = 0.34, ǂP = 0.198
CASE REPORT

A foreign body in disguise

R. Leith · A. C. O’Connell

Abstract

Background Young children habitually place objects in their mouths to discover and learn about the world and it is considered a normal stage of early childhood development. Ingestion and aspiration of foreign objects predominantly occurs in preschool toddlers with a peak incidence at age three years, and can have serious consequences.

Case report A 2-year-old boy presented to the Dublin Dental University Hospital with a tooth-coloured mass tightly adherent to a lower primary incisor. The lesion surrounded the cervical third of the crown on the lower right primary central incisor and extended subgingivally. The tooth was mobile but with minimal inflammation.

Treatment The tooth was subsequently extracted under general anaesthesia to reveal that the mass was in fact a foreign body, although this was originally thought unlikely as a cause.

Follow-up The patient underwent an unremarkable recovery.

Conclusion The case of a foreign body disguised as a tooth-like abnormality was only identified under general anaesthesia, and even then it was impossible to prise the object from the tooth in situ. Misdiagnosis of impacted foreign bodies in young children presents complicated diagnostic problems.

Fig. 1 Labial view of mandibular right primary incisor with impacted foreign body

Fig. 2 Coronal view (mirror image) of mandibular right primary incisor with impacted foreign body (Figs. 1, 2). This lesion was tightly adherent to the tooth and had the texture of partially mineralised dental tissue. The surrounding gingiva was not inflamed and there were no other significant intra-oral findings.

Fig. 3 Mandibular occlusal radiograph showing radiopaque area surrounding the mandibular right primary incisor root

Fig. 4 Photograph of extracted mandibular right primary incisor: a with foreign body in situ; b with foreign body removed
Etiology, diagnosis and treatment challenges related to aggressive periodontitis in children and adolescents

Professor Dorte Haubek, DDS, PhD. Dr. Odont.,
Head of Section for Pediatric Dentistry,
Department of Dentistry and Oral Health,
Aarhus University, Aarhus
Denmark
Any questions?
15-yr old Danish boy with periodontitis

Bone loss:
16, 15, 25, 26, 42, 41, 31, 32
Severe Gingival Recession in Trisomy 18 Primary Dentition. A Clinicopathologic Case Report of Self-Inflicted Injury Associated With Mental Retardation

Dimitris N. Tatakis* and J. Todd Milledge†

This clinicopathologic case report documents severe gingival recession in the primary dentition of a trisomy 18 patient. Primary molar and canine teeth exhibited recession extending beyond the midpoint of the buccal aspect of the root, occasionally reaching the root apex. Radiographic examination revealed taurodontism in both primary and permanent teeth. Clinical and histopathologic findings, along with case history, eliminated the possibility of prepubertal periodontitis and suggested a diagnosis of self-inflicted injury associated with mental retardation. Histologic examination of the primary teeth revealed normal cementum and dentin structure. Taurodontism, histologic structure of the dentition, and severe attachment loss in the primary dentition have not been described previously in trisomy 18. J Periodontol 2000;71:1181-1186.

Figure 1.
Radiographic appearance of hypertaurodont first permanent molar (tooth #19).

Figure 2.
Clinical appearance of the severe gingival recession in the upper right (A) and lower right (B) quadrant of the trisomy 18 patient.
Population-based study in Ghana

At baseline

- Aa was detected in 54% at subject level
- The JP2 genotype was detected in 9% of subjects
- Clinical attachment loss (CAL) was detected in 107 (21.4%) subjects
Ghana results

Relative risks (RR) for clinical attachment loss (AL ≥ 3 mm) according to baseline carrier status of JP2 and non-JP2 genotypes of Aa in subjects

<table>
<thead>
<tr>
<th>Aa</th>
<th>AL ≥ 3 mm (diseased)</th>
<th>AL &lt; 3mm (healthy)</th>
<th>Crude RR</th>
<th>95 % CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aa neg.</td>
<td>17</td>
<td>145</td>
<td>1.000</td>
<td>Reference</td>
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</tbody>
</table>

N=315; 2-yr follow-up

Åberg et al. 2014
Microbiological testing, when and who?
Use of microbiological testing

- Diagnose
- Choice of treatment
- Choice of antibiotics
- Control of treatment
- Prevent misuse of antibiotics
- Identification of transmission pathway for pathogens
- Prognosis
CONCLUSIONS

This study showed that mechanical periodontal therapy with a single regimen of amoxicillin and metronidazole was successful in reducing and maintaining a low rate of detection of JP2 in diseased and healthy sites of African Americans diagnosed with LAP, along with a significant reduction and stability of clinical parameters of the disease, 12 months post-therapy.
Prophylaxis and treatment perspectives

- Prophylaxis
  - oral hygiene instruction
  - monitoring periodontal status more regularly
  - early intervention
  - monitoring also periodontal status of children and adolescents

- Microbiological testing/microbiological diagnosis
- Use of antibiotics
  - as supplement to conventional periodontal therapy