MOLAR INCISOR HYPOMINERALIZATION: A STUDY OF PREVALENCE IN A GROUP OF PORTUGUESE CHILDREN

Barbosa C*, Barroso J**, Silva Carvalho C***, Andrade C****, Silva Cardoso C*****

*Specialization Course in Pediatric Dentistry - School of Dental Medicine, University of Porto (FMDUP) ** Master in Pediatric Dentistry - Universitat Internacional de Catalunya ***Master in Public Health - School of Dental Medicine, University of Porto; Specialist Course in Pediatric Dentistry - School of Dental Medicine, University of Porto; Teacher associated with aggregation FMDUP;****PhD in Pediatric Dentistry - School of Dental Medicine, University of Porto; Teacher associated with aggregation FMDUP;*****PhD in University Complutense de Madrid. Auxiliary Teacher in Pediatric Dentistry - University Fernando Pessoa.

Introduction

Molar Incisor Hypomineralization (MIH) is a systemic pathology characterized by the reduction of the enamel’s mineralization of one to four first permanent molars and frequently associated with permanent incisors. It is considered a universal clinical problem [Weresheim et al. 2003, Willems et al. 2008]. In 2003, the following recommendations were published in order to unify the MIH diagnosis the first permanent molars and incisors must be examined when teeth are clean after oral hygiene; the best moment to perform the exam is at the age of 8 and for every tooth the following aspects must be registered: absence or presence of demarcated opacities, post eruptive enamel breakdowns, presence of palatal atypical reduction, and extractions caused by situations such as MIH and molar or incisor eruption failure associated to MIH [Weresheim et al. 2003]. The aim of this paper lies on the investigation of the prevalence and possible etiologies related to the appearance of Molar Incisor Hypomineralization in children aged between 7 and 9 years old. These children are patients in clinics of the Oporto University’s Faculty of Dental Medicine.

Keywords: “Molar-incisor-Hypomineralisation”; “MIH”; “Prevalence”, “etiologia”, “diagnosis”, “treatment”.

Materials and Methods

Results

Discussion

When we compared our prevalence result (13%) with other studies using the same diagnostic criteria, similar ratios are obtained.

The gender of participating children was higher for female (65% 2:1:3), but in most published studies the gender of participating children was equally distributed [Raihela et al. 2003 Willimann et al. 2004, Ogden et al. 2008, Wickel et al. 2008].

Although in the present study more maxillary teeth in total were affected compared to the mandibular, when molars were evaluated, mandibular teeth were much more affected than maxillary teeth. This finding is in agreement with previous reports [Weresheim et al. 2003, Willems et al. 2008; Costa Silva et al. 2011; Kubicki MP et al. 2012].

The most frequently affected tooth was the first maxillary right molar (16), which is consistent with findings from previous studies [Saviño et al. 2009; Costa Silva et al. 2011; Kubicki MP et al. 2012].

The mild defects were the most prevalent type (89%), this was in agreement with some other preceding studies [Saviño et al. 2009; Fullér et al. 2012; Zwahlen F et al. 2013].

Although the etiology of MIH remains undefined, it seems to be a common understanding in literature that systemic factors are possible etiological factors, associated with a genetic predisposing condition, since the third pregnancy trimester until 3 years of age (dental crown mineralization) [Abdusseit 2010].

Conclusion

• Thirteen (13%) children showed MIH in clinic of the Oporto University’s Faculty of Dental Medicine;
• The HI defects were observed in majority in females, in maxillary teeth in 8 years old, having been more mild defects, although these differences were not statistically significant.
• Despite the limitations of this study, a statistically significant relationship between the appearance of HI and postnatal medical history was seen, specifically in cases of pneumonia, bronchiolitis or urinary infection and taking antibiotics.
• More studies should be conducted with more representative sample to draw more conclusions.

Fig. 3 - Characteristics of HI in the present study

Table 1. Distribution and prevalence of the demarcated hypomineralisation gender groups

<table>
<thead>
<tr>
<th>Gender</th>
<th>Distribution</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>56%</td>
<td>13%</td>
</tr>
<tr>
<td>Female</td>
<td>44%</td>
<td>13%</td>
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</tbody>
</table>

Table 2. The distribution of the diagnosed hypomineralisation in the studied populations

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Distribution</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 years</td>
<td>56%</td>
<td>13%</td>
</tr>
<tr>
<td>8 years</td>
<td>44%</td>
<td>13%</td>
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For the diagnosis of MIH, the judgment criteria proposed by the European Academy of Paediatric Dentistry (EAPD), in 2003 by Weresheim et al. was used.

Clinical Implications

Epidemiological studies suggest that the prevalence of MIH is increasing. It is important that professionals are able to differentiate a significant between different enamel defects, clinical signs must be carefully evaluated for the treatment success.

Fig. 4. A. Clinical examination process. B. Microscopic lesion with enamel demineralization index; C. Enamel erosion typology - isolated or associated to enamel hypoplasia; D. Enamel hypoplasia with postnatal defect (36) related to the birth of the defective tooth with maternal diabetes and postpartum chorioamnionitis.

Although the etiology of MIH remains undefined, it seems to be a common understanding in literature that systemic factors are possible etiological factors, associated with a genetic predisposing condition, since the third pregnancy trimester until 3 years of age (dental crown mineralization) [Abdusseit 2010].

Fig. 5. A. First permanent molars (69 21 36) with hypomineralisations. B. First permanent molars with hypomineralisations (69 21 36). C. None of the teeth in 21 with dental erosion.