Abstract

Aim. Evaluation of the extension of caries risk and incidence of decays of temporary teeth in children with cleft lip and palate. Materials and methods. The study was conducted on a sample of 64 children with various types of cleft lip and palate (31 children with unilateral cleft lip and palate, 18 children with bilateral cleft lip and palate, 5 children with cleft lip and 10 children with cleft palate), aged between 3 and 6 years, investigated in the Orthodontics Clinic of „Apollonia” University. The tooth surfaces were examined with the probe and the mirror, incipient caries and tooth decay with manifest cavities detectable by probing being identified. The gingival status was examined, whichever the inflammatory signs from the free gingival margin and papillae. Oral hygiene was rated by the presence/absence of dental biofilm after examining the buccal and lingual surfaces of the teeth. Statistical analysis was based on the non-parametric Pearson correlation, frequency analysis and linear regression method for determining the functional interrelationships between variables. Results and discussion. In children with cleft lip and palate, the highest incidence of caries occurs on the upper deciduous central incisors and first molars. Carious lesions of the central and lateral incisors tend to increase and decrease in frequency symmetrically and have a strong causal relationship. In 80.6% of cases, the decay of central incisors causes caries on the lateral incisors. Mean number of teeth affected by caries in temporary dentition at ages between 4-6 years is 7.27. The average ratio of dmft is 8.6136, a quite higher value, compared with the normal values registered in normal children, evidencing a faster and more rapid development of dental caries. Poor oral hygiene is associated with cleft and number of caries. It seems that the parents of children with cleft lip and palate have difficulties in implementing an effective brushing technique, given the particular anatomy of the cleft area, immobility of the lip scar and fear of harming or irritating the alveolar dehiscence. In our study, children often come from families with a low socio-economic status and a low level of education on oral healthcare. Only 27.3% of patients in our study group are active and follow controlled fluoridation programs. Conclusions.1. Parents of children with birth defects should be better motivated to achieve a correct and complete oral hygiene. 2. Oral health programs and interventions aimed at professionally controlling dental plaque in temporary dentition are strongly needed. 3. Treatment of caries on deciduous teeth, requiring professionists and financial support by national programs, is beneficial and necessary. Keywords: cleft lip and palate, caries, temporary dentition.

1. INTRODUCTION

Cleft lip and palate have severe, both morphological and functional consequences on the maxillary, inducing pathetic dysfunction which impede further development of the dentomaxillary apparatus.

Although a reduction of dental caries is reported in the industrialized countries of Europe, children with cleft lip and palate remain in the group with increased risk of caries [1,2]. Control of oral hygiene is impeded by dental malpositions, irregularly shaped maxillary arches, neonatal and fixed orthodontic appliances recommended, severe malocclusion, persistent fistulas and scar retraction after successively performed corrective surgeries.

Scarce information is available on the incidence of dental caries in temporary dentition in children with cleft lip and palate. Children with cleft lip and palate, with ages between 18 months and 4 years, represent a group with a significantly increased risk of developing dental caries in upper incisors, compared to children with other craniofacial anomalies [3-5].

Comparative studies currently available on the prevalence of dental caries in patients with cleft lip and palate show a remarkable variation of results. Al Dajani showed that cleft is not a risk factor for caries prevalence, while Sundell et al. cites authors that could not find strong enough
evidence supporting the high interrelation between caries incidence and cleft [4,6]. Other authors note an increased prevalence of dental caries in patients with cleft compared with healthy patients [5, 7-11]. In general dental practice, it is visible that patients with various types of cleft are susceptible to caries regardless of the socio-economic status, so that implementation of preventive programs is an absolute must. Neglect of an early treatment of dental caries can negatively influence or even compromise the orthodontic treatment that corrects malocclusion, speech therapy and, subsequently, corrective surgery.

**AIM.** The present study analyzes the extension of caries risk and incidence of decays in temporary dentition in children with cleft lip and palate. The survey was oriented along two directions:

- Evaluation of clinical indicators of dental hygiene and assessment questionnaires filled in by parents of children with cleft.
- Evaluation of clinical indicators of Index \( (dmft) \) and study of the etiopathogenic correlations established in preschool children with cleft lip and palate.

## 2. MATERIALS AND METHODS

The study was conducted on a sample of 64 children with various types of cleft lip and palate (32 children with unilateral cleft lip and palate, 17 children with bilateral cleft lip and palate, 5 children with cleft lip and 10 children with cleft palate), aged between 3 and 6 years, treated in the Orthodontics Clinic of „Apollonia“ University.

The incidence of cleft is higher in experimental group of boys (54.5%) compared to the corresponding number of experimental group of girls (45.5%).

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**Fig.1. Graphical representation by gender in the study group**

In terms of distribution according to type of cleft, there results:

- cleft palate - 10 cases (15.06 %)
- cleft lip - 5 cases (7.03 %)
- unilateral cleft lip and palate - 31 cases (47.03 %)
- bilateral cleft lip and palate – 18 cases (26.5 %)

**Fig.2. Graphical representation of the types of cleft in the study group**
All cases were classified according to EUROCART definitions (1997), each piece of information regarding risk factors, maternal age and details on birth being obtained directly from mothers in the postpartum period. Multiple reliable sources of information were used, including birth certificates, analysis bulletins, pediatric sheets, in order to process valid data related to epidemiological variables (age, sex, type of cleft, etiopathogenic issues). Temporary teeth were clinically examined with the dental mirror and probe, both incipient and manifest caries being identified. Gingival status was examined, whichever the inflammatory signs of the free gingival margin and papillae. Oral hygiene was rated by the presence/absence of dental plaque on the buccal and lingual surfaces of teeth. Statistical analysis was based on the Pearson nonparametric correlation, frequency analysis and linear regression method, for determining the functional interrelationships among variables.

3. RESULTS AND DISCUSSION

In the study group, 36 children showed no carious lesion, and 28 children (44%) had a variable number of carious lesions. It was observed that caries are localized preferentially in upper deciduous central incisors and first molars, followed by upper lateral incisors, and deciduous canines. The maximum number of caries (2) was recorded on central incisors and first deciduous upper molars.

Decays on deciduous upper central and lateral incisors tend to grow and symmetrically decrease as to their frequency, showing a strong causal link, in 80.6% of cases the decay of central deciduous upper incisors causing the decay of lateral deciduous incisors.

The average number of teeth affected by caries in deciduous dentition is 7.27 at ages of 4-6 years. The average value of dmft is 8.6136, higher compared to the values registered in normally developed children, evidencing a higher number of carious lesions over a short period of time. Comparatively with Chinese children with ages between 3-6 years, studied by Zhu et al. and Bian et al. or with Vietnamese children aged 4-6 years, studied by Besseling and Dubois, Romanian children have a higher number of cavities and higher dmft index values. The missing teeth score has an average value of 0.84, while the conservatively treated deciduous teeth record the lowest average of 1.4 in the study group [5, 12, 13].

Carious lesions are associated with a poor oral hygiene. To assess the oral hygiene status (OHI), the descriptive index used in the study group shows values varying between 1 and 3, with an average value of 2.22. In our study group, 22.7% of children had a unitary OHI index, 31.8% had an OHI index of 2, and most of them, 45.5%, an index around 3.

The following difficulties related to oral hygiene, mentioned by numerous studies, should be taken into account:

Fig.3. Intraoral image of the distribution of decays in a patient with cleft lip and palate from the study group
a syndrome of dryness of the oral cavity, predominantly associated with oral breathing after nose surgery;
- difficulties in oral brushing facing malposition of front teeth, retractile scar in the lip;
- disfunction through Class III/2 Angle after nose surgery anomaly;
- diet and eating habits detrimental to dental health;
- the possible persistence of dehiscence that maintains the oral-nasal communication;
- hypertrophies of palatal tissue after palatoplasty
- a high prevalence of erosion and hypoplasia of upper teeth near the cleft
- the levels of salivary high cariogenic microflora in perssistent dehiscence
- Moura et al. and Sundell et al. suggested a possible link between dental caries and lip surgery or bone graft [3, 4].

Only 45% of the parents who filled in the questionnaires bring their child to the dentist once a year and not 4 times, as recommended. Daily number of tooth brushings is minimal, especially in the morning, in 25% of cases, and in the evening before bed time, in 25% of them. Only 39% of patients have two daily brushings. 59% of patients are properly brushed, apply a correct brushing technique and are often assisted by older brothers and rarely by parents. Only 27.3% of the patients in the study group are actively involved in controlled fluoridation programs [14, 15].

4. CONCLUSIONS

1. The highest incidence of caries affects the upper deciduous central incisors and molars in children with cleft lip and palate. Carious lesions of the central and lateral upper deciduous incisors tend to increase and decrease in the same manner, showing a strong causal relationship.

2. Poor oral hygiene is associated with cleft and number of caries. It seems that parents of children with cleft have difficulties in implementing effective brushing techniques, given the particular anatomy of the area of cleft, lip scar immobility and fear of harming or irritating alveolar dehiscence. In our study, children often come from families with a low socio-economic status and low level of education on oral health.

3. Mean number of teeth affected by caries in deciduous teeth is 7.27 in 4-6 year-old children.

4. The average value of the dmft index is 8.6136, higher compared with normal values, showing a faster development of dental caries over a short period of time.

5. Comparatively with the Chinese children aged 3-6 years considered in the study of Bian et al., or with Vietnamese children aged 4-6 years studied by Besseling et al., Romanian children have a higher number of caries and a higher dmft index.

6. On the average, 1.4 carious lesions have been treated.

7. Parents of children with birth defects should be better motivated to achieve a proper oral hygiene and complete it daily in their cleft lip and palate child.

8. It is imperative that oral health programs and professional interventions aimed at controlling dental plaque should involve both cleft lip and palate children and their parents.

9. It is beneficial and necessary to treat and recuperate the deciduous teeth, which implies sufficient professionals and financial support at national scale.

References


6. Al-Dajani M. Comparison of Dental Caries Prevalence in Patients With Cleft Lip and/or Palate and Their Sibling Controls. Cleft Palate Craniofac J. 2009;46(5):529-31