DENTAL STATUS ASSESSMENT OF CHILDREN TREATED UNDER GENERAL ANESTHESIA

Radosveta Andreeva

Department of Pediatric Dental Medicine, Faculty of Dental Medicine, Medical University of Varna

ABSTRACT

Children treated under general anesthesia (GA) have a compromised dental status due to the specifics of their contingent. The aim of this article is to assess caries prevalence in a group of children treated under general anesthesia. Subject of monitoring of the clinical research are 396 children divided into three age groups: up to 5 years, between 6 and 12 years and over 12 years. The dental status was examined and registered according to WHO using the dmft/DMFT index. This index is higher in children in the group of children under 5 years (16.59±3.46) compared to 5-12 year old patients (10.66±1.79) and patients over 12 (9.96±1.74). There is a statistically significant difference in the incidence of dental caries between the first and second study groups, as between the first and third groups. The probable cause is the large number of children with early childhood caries (ECC) whose dmft index is the highest. High index values are mostly because of untreated complicated carious lesions. The number of obturated(f) and premature extracted(m) teeth is negligible. This result demonstrates more active cariogenic environment in children treated under general anesthesia. It is probably due to the reduced ability to create proper oral hygiene skills, due to physical disorders or the pain of complicated caries in children with early childhood caries and the need of prophylaxis is obvious.

Keywords: *DMFT, general anesthesia, ECC*

INTRODUCTION

General anesthesia is a method of choice that provides high-quality dental care when it is impossible to use routine methods. There are two main reasons for behavioral problems in pediatric dental practice: age and/or mental illness. Difficulties in pediatric treatment are related to the dramatic discrepancy between the severity of the clinical status and the possibility of perceiving dental treatment in the context of the extreme developmental dynamics in the maxillofacial area, and the teeth (1-3). In recent years epidemiological studies have documented an increase in the number of children with early childhood caries, both in Bulgaria and in the world, and the number of children with manifestations of the autism spectrum is increasing (3-6). They are a serious challenge for every clinician. The right approach for these children is the use of effective and innocuous healing methods and behavioral control that could be done by the method of general anesthesia (6,7).

AIM

The aim of this article is to assess caries prevalence in a group of children treated under general anesthesia.

Address for correspondence:
Radosveta Andreeva
Faculty of Dental Medicine
84 Tzar Osvoboditel Blvd
9000 Varna
e-mail: doctor_ra@abv.bg

Received: June 3, 2018
Accepted: June 29, 2018

MATERIALS AND METHODS

Subject of monitoring of the clinical research are 396 children divided into three age groups: up to 5 years, between 6 and 12 years and over 12 years .

The dental status is examined and registered according to WHO by the dmft/DMFT index. This index is one of the most often used in oral epidemiology to estimate the distribution of dental caries and the need of treatment among the population. The index is based on clinical observation of patients with dental mirror, dental probe, cotton pellets and suction. The dmft/DMFT index represents the sum of the teeth with decay(d), prematurely missing teeth (m), and those with fillings (f). The dental status of the children was diagnosed by visual observation and scored on teeth and surfaces with an initial diagnostic threshold D1 reflecting the earliest visual lesions (an enamel lesion, visible after drying) (8,9).

RESULTS AND DISCUSSION

Table one shows that there is a statistically significant difference in the prevalence of dental caries between the first and second study groups and between the first and third groups. This index is higher in children from the first examined group (under 5 years of age) (16.59±3.46), compared to 5-12-year-old patients (10.66±1.79) and patients over 12 years (9.96±1.74) (Table 1).

The higher level of dmft/DMFT index in the first examined group of patients is associated with early childhood caries (ECC). This diagnosis is the most common cause for the need of treatment under general anesthesia. This is a severe diagnosis that affects children between the ages of 1 and 3 and leads to a progressive dilation of hard dental tissues. Worldwide, the prevalence of this disease is increasing. A major etiological factor for ECC is long-term breastfeeding after one year of age of the child. Our results are confirmed by other authors (10-13).

Lesions D1 are predominantly in the third age group (3.93±1.89) and the least in number in the first group (2.05±1.29). The differences are statistically significant (t1,3=-6.940, P=0.00001). This fact is very important because it is indicative of the existing active caries process. Caries incipiente can be managed

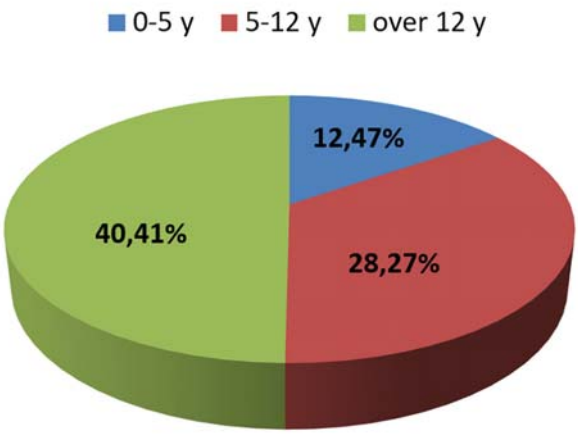

Fig. 1. Relative shares of D1 in the different age groups

Table 1. Caries prevalence in the studied children from the three age groups

Children	n	d1/D1 mean±SD	d2/D2 mean±SD	d3/D3 mean±SD	d4/D4 mean±SD	m/M mean±SD	f/F mean±SD	dmft/ dmf(T+t)/ DMFT mean±SD
0-5y. (1)	198	2.05±1.29	1.99±1.37	2.75±1.52	9.65±1.69	0.05±0.23	0.09±0.29	16.59±3.46
5-12y. (2)	167	2.82±1.73	1.01±0.92	2.06±1.43	4.08±0.01	0.38±0.56	0.31±0.65	10.66±1.79
over 12y. (3)	30	3.93±1.89	1.23±1.30	1.83±0.79	2.7± 0.82	0.06±0.25	0.17±0.59	9.96± 1.74
t		$t_{1,2}$= -4.857; P=0.00001	$t_{1,2}$= 7.870; P=0.00001	$t_{1,2}$= 4.423; P=0.00001	$t_{1,2}$=35.104; P=0.00001	$t_{1,2}$=-7.775; P=0.00001	$t_{1,2}$=-4.081; P=0.00003	$t_{1,2}$= 6.391; P=0.00001
		$t_{1,3}$= -6.940; P=0.00001	$t_{1,3}$=2.850; P=0.00238	$t_{1,3}$=3.230; P=0.00071	$t_{1,3}$=21.914; P=0.00001	$t_{1,3}$=-0.461; P=0.323	$t_{1,3}$=-1.038; P=0.150	$t_{1,3}$= 4.214; P=0.00416
		$t_{2,3}$= -3.198; P=0.000806	$t_{2,3}$=-1.127; P=0.131	$t_{2,3}$=0.841; P=0.201	$t_{2,3}$=5.898; P=0.00001	$t_{2,3}$=3.052; P=0.0013	$t_{2,3}$=1.095; P=0.137	$t_{2,3}$=-0.883; P=0.193

with prophylactic measures and use of fluorinated varnish and remineralizing agents. Our results are confirmed by other authors (14-16).

These results are shown in Fig. 1.

The d2/D2, d3/D3, and d4/D4 lesions are predominantly found in the group of young patients (under 5 years). The values for this group are: 1.99±1.37, 2.75±1.52 and 9.65±1.69. For the second group of patients studied, the values for d2/D2, d3/D3, d4/D4 are as follows: 1.01±0.92; 2.06±1.43 and 4.08±0.01. In the third group, D2=1.23±1.30l; D3=83±0.79; D4=2.7±0.82. There are statistically significant differences concerning D2 lesions between the first and second groups (t1,2=7.870, P=0.00001) (Fig. 2).

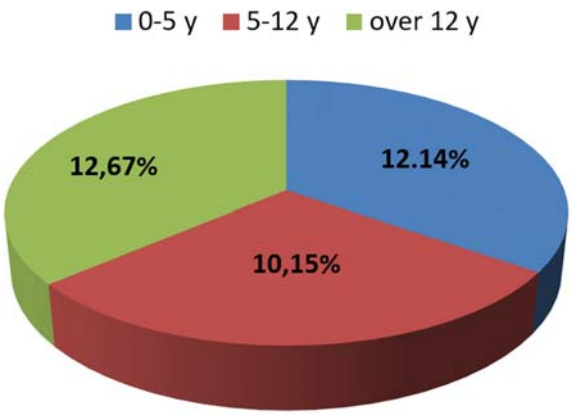

Fig. 2. Relative shares of D2 in the different age groups

The higher level of caries prevalence concerning d2/D2, d3/D3, d4/D4 lesions in the first study group is again associated with ECC, because in the third and the fourth stage of the disease, upper incisors and molars are generally affected by carious lesions. On the other side, the children with mixed teeth (second study group) have a lower number of carious lesions due to physiological exfoliation. This leads to decreasing of their DMF(T+t) index.

For lesions D3, a statistically significant difference is found between the first and the other two groups (t1,2=4.423, P=0.00001, t1,3=3.230, P=0.00071) (Fig. 3).

Complicated caries (D4 lesions) were the most common in the first study group, followed by the second, and the third group. Differences in the prevalence of these lesions between the three groups were

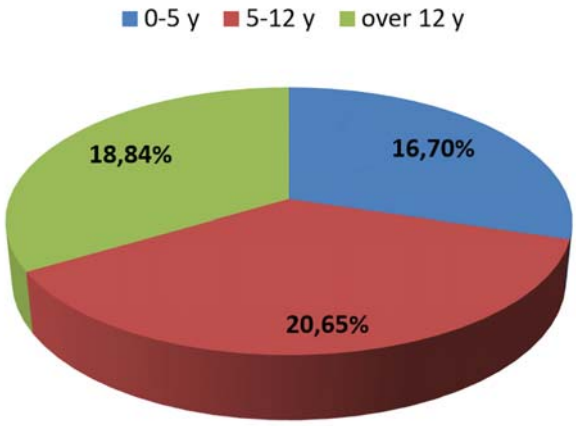

Fig. 3. Relative shares of D3 in the different age groups

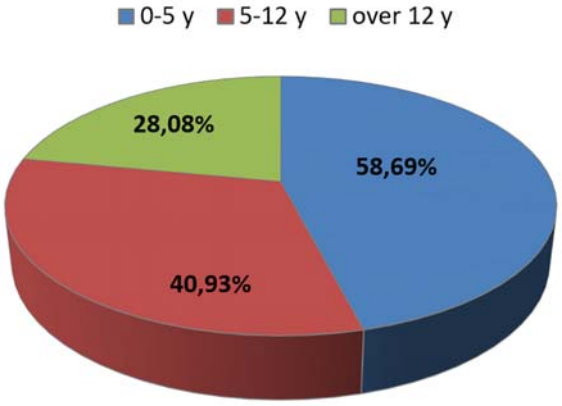

Fig. 4. Relative shares of D4 in the different age groups

statistically significant (t1,2=35.104, P=0.00001; t1,3=21.914; P=0.00001; t2,3=5.898; P=0.00001) (Fig. 4).

The largest number of premature tooth extractions (m/M) - 0.38±0.56 is in the second study group, followed by the first (0.05±0.23) and the third (0.06±0.25). The premature extractions during the dental treatment under general anesthesia is a usual procedure, because this treatment is more radical and aggressive. Extraction of teeth with periodontitis is required. Statistically significant is the difference between the second and the first, and between the second and the third groups (t1,2=-7.775, P=0.00001, t1,3=-0.461, P=0.323, t2,3=3.052, P=0.0013). The values of the first, second and third groups are: 0.09±0.29, 0.31±0.65, 0.17±0.59, respectively (Table 1, Fig. 5.). The number of prematurely extracted teeth (m) and the number of the filled teeth (f) is negligi-

ble, because it is associated with retreatment and it happens very rarely in our clinic.

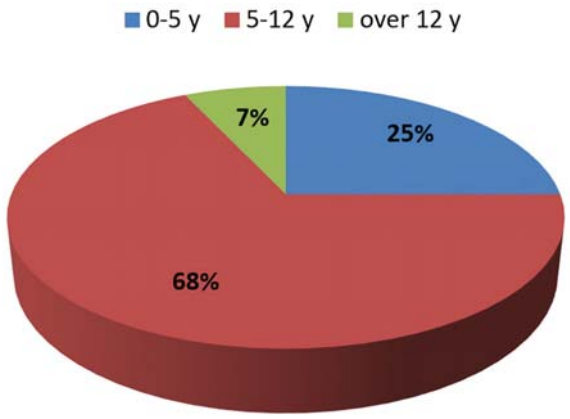

Fig. 5. Relative shares of the fillings in the different age groups

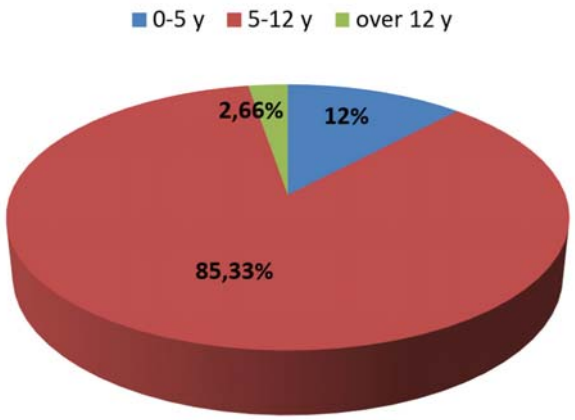

Fig. 6. Relative shares of the missing teeth in the different age groups

CONCLUSION

The data from the dental examination status shows that children treated under general anesthesia have a high caries activity. High dmft/DMFT index values are mostly because of untreated complicated carious lesions. This result demonstrates more active cariogenic environment in children treated under general anesthesia. It is probably due to the reduced ability to create proper oral hygiene skills, caused by physical disorders or the pain of complicated caries in children with early childhood caries and the need of prophylaxis is obvious.

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