ABSTRACT

General anesthesia is a method of pharmacological behavior management of children. The children treated under general anesthesia (GA) are mainly 3 groups: children with early childhood caries (ECC); anxious children and children with special health needs.

The aim of this article is to assess the main indications for the treatment under general anesthesia. Subject of monitoring of the retrospective research are 396 children divided into three age groups: up to 5 years, between 6 and 12 years and over 12 years. The retrospective study includes determining the relative proportions of children treated under general anesthesia due to the indications, documented on medical records. Children with ECC are 95% (188) of the children in the first group and 47.5% of all the children treated under general anesthesia. Children with specific health needs (SHN) - 67 patients (17%) of all treated children under general anesthesia and 80.64% of the children treated in the third age group. The behavioral management problem is - 78.4% of all indications for the second group and (47%) for all age groups. The relative share of children treated with narcosis due to an increased reflex for vomiting - 1.51% and surgical procedures - 2.27% is insignificant for all age groups.

This result demonstrates the main indications for dental treatment under GA, which are: children with ECC - the main reason; anxious children - the second most common indication for general anesthesia and children with special health needs - the third most common cause of treatment under the GA.

Keywords: general anesthesia, indications, pediatric dentistry

INTRODUCTION

The indications for general anesthesia (GA) use are based on specific criteria that take into account the risks, benefits, effectiveness, expected results, and the use of other behavioral management techniques as an alternative (1-4). The causes of treatment of children under GA should be strictly refined by pediatric dentists. This type of treatment is only applied when routine treatment options are completely finished. There are some groups of children, who need dental treatment, but it is impossible for it to be done on the dental chair. One of the groups consists of children with disabilities who have neglected oral hygiene. They also use sugar-containing medicines and have difficult access to dental treatment and prophylactic care (3,5,6). Another part includes little children with severe dental pathology. The management of the behavior of negative and strongly negative children due to the Frankls is beyond the possibilities of non-pharmacological behavior methods and requires the use of GA (5,7,8).
AIM
The aim of this article is to assess the main indications for the treatment under general anesthesia.

MATERIALS AND METHODS
Subject of monitoring of the retrospective research are 396 children divided into three age groups: up to 5 years, between 6 and 12 years, and over 12 years. The retrospective study includes determining the relative proportions of children treated under general anesthesia due to the main indications, documented on medical records. The various indications of treatment by age groups are counted and their percentage is calculated.

RESULTS AND DISCUSSION
The indications for treatment under general anesthesia in relation to different age groups according to the medical records of children treated under general anesthesia are summarized in a Table 1.

Table 1. Relative shares of children treated under general anesthesia according to the indications described in the medical documentation

<table>
<thead>
<tr>
<th>Indications for treatment under GA according to the age</th>
<th>Age group</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-5 years</td>
<td>6-12 years</td>
</tr>
<tr>
<td>ECC</td>
<td>188 (94.9%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Children with specific health needs (SHN)</td>
<td>5 (2.52%)</td>
<td>37 (22%)</td>
</tr>
<tr>
<td>Lack of cooperativity of children due to fear of dental treatment</td>
<td>50 (25%)</td>
<td>131 (78.4%)</td>
</tr>
<tr>
<td>Complicated surgical procedures</td>
<td>3 (1.5%)</td>
<td>4 (2.39%)</td>
</tr>
<tr>
<td>Increased reflex for vomiting</td>
<td>2 (1%)</td>
<td>3 (1.8%)</td>
</tr>
<tr>
<td>Total</td>
<td>198 (50.14)</td>
<td>167 (42.27)</td>
</tr>
</tbody>
</table>

χ² = 34.272  df = 8  P = 0.0000

Children with early childhood caries are 188 (95%) of the youngest age group and about half (47.5%) of all children treated under general anesthesia. Caries in early childhood is a severe diagnosis affecting children between 1 and 3 years of age with varying degrees of carious activity. For children under the age of 3, the presence of carious lesions on the vestibular surfaces of the upper central incisors is indicative of the presence of early childhood caries (9,10). This is the most common indication for treatment under GA.

The problem with behavioral management is most common among the age group of 6-12 years – 131 (78.4%). This is the second most common indication for GA for all age groups - 184 (47%). High anxiety, as an indication for treatment under the GA is seen in 50 (25%) patients for the first study group and 3 (9.67%) for the third group.

Children with specific health needs require treatment under GA. Physical and mental disorders are the third most common cause of treatment under the OA. Their number is 67 (17%) of all children treated under general anesthesia, but also 25 (80.64%) of the children treated in the third age group - over 12 years of age. For the first group this percentage is 2.52% (5), and for the second - 37 (22%). Our results are confirmed by other authors (11-13).

The relative share of children treated with nar-
In our study, the most common indication for GA in dentistry is a small child with a major pathology that is similar to other studies. According to another study by Harrison and Roberts (1998) (3), the most common reason for GA treatment is the need for many extractions.

From the total of 396 examined children treated under the GA - 321 (81%) are without medical problems, 8 (2%) are chronically ill, 67 (17%) have SHN (Table 2).

<table>
<thead>
<tr>
<th>Types of medical problems of patients treated under GA</th>
<th>N (100) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerebral palsy</td>
<td>33(44)</td>
</tr>
<tr>
<td>Blood dyscrasias</td>
<td>4(5)</td>
</tr>
<tr>
<td>Mental disorders (epileptic patients)</td>
<td>11(14.6)</td>
</tr>
<tr>
<td>Congenital heart disease</td>
<td>8(10.6)</td>
</tr>
<tr>
<td>Syndromic</td>
<td>5(6.6)</td>
</tr>
<tr>
<td>Autists</td>
<td>11(14.6)</td>
</tr>
<tr>
<td>Other medical problems</td>
<td>3(4)</td>
</tr>
<tr>
<td>total</td>
<td>67(SHN) + 8(HI) = 75(100)</td>
</tr>
</tbody>
</table>

Table. 2. Relative share of children with different types of medical problems treated under general anesthesia

Children with cerebral palsy are the majority of the patients treated under GA - 33(44%). Only 4 (5%) of children with specific health needs have blood disorders (leukemia, autoimmune hemolytic anemia and thalassemia) and 11 children – 11 (14.6%) of patients with mental disabilities. The examined children with congenital heart disease are 8 (10.6%). Patients with syndromes are 5 (6.6%). Children with autistic spectrum problems are 11 (14.6%). Patients with other medical problems (brain atrophy, hypothyroidism) are 3 (4%) (Table 2).

Our results indicate that the percentage of children treated under the GA with congenital heart problems is negligible 8 (10.6%) and differ from other studies which indicate that the number of children treated under general anesthesia with congenital heart disease (CHD) is greater (14,15). In this study many patients were treated under general anesthesia due to their behavioral problem. However, other studies have shown that some patients have been treated under GA due to the fear of dental treatment or because they are too small to cooperate but are healthy (16) and the main factors that may cause fear of dental treatment include social factors or previous negative experiences (12,17).

In both our and other studies, it has been found that in some cases the presence of multiple caries is combined with a high level of anxiety leading to serious treatment problems (18,19). In contrast to our results, some authors have published that many of the treated children had some form of medical problems (10,14). Our results are similar to those of other researchers who report that behavioral problems and inability to co-operate are the main causes of treatment under GA (18,19). Another study, the results of which also are similar to ours, shows a significantly higher number of dental procedures for healthy patients than for patients with special needs due to anxiety and fear of dental treatment among healthy patients (13,20).

**CONCLUSION**

The most common indication for treatment under the GA for children under the age of 5 years is ECC. In children with mixed dentition, the main indication for this type of treatment is the lack of cooperation because of dental fear. In children over 12 years of age, the most commonly reported indication for treatment under GA is a kind of medical problem, followed by the need of complicated surgical procedures. Most of the children treated under GA are without medical problems, but too young in age or with behavioral problems.

**REFERENCES**


