The Prevalence of Cleft Lip and/or Palate in Children from Łódź in Years 2001-2010

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One of the most frequent congenital malformations is cleft lip and/or palate. The above-mentioned defect is a serious medical and social problem, and knowledge concerning its incidence pictures the scale of this phenomenon.

The aim of the study was to determine the prevalence of cleft lip and/or palate in children in Łódź during the period between 2001 and 2010.

Material and methods. We were able to obtain data from The Polish Registry of Congenital Malformations concerning the number of live born infants, and birth of children with cleft malformations in Łódź during the period between 2001 and 2010.

Results. The mean incidence of cleft malformations amounted to 1.16/1000 live born infants in Łódź during the period between 2001 and 2010.

Conclusions. During the period between 2001 and 2010, a significant decrease in the prevalence of cleft lip and/or palate was observed in Łódź. The most common type of defect was isolated cleft palate, while the most rare – cleft lip. Considering boys the most frequent defect was cleft lip and palate, while in girls – isolated cleft palate. Attention should be drawn to the fact of the decreased number of deliveries in Łódź, observed in the past decade.

Key words: cleft lip, cleft palate, incidence

Congenital malformations include anatomical, chromosomal, and molecular abnormalities, which originated during fetal growth, and their effects being observed after childbirth. Knowledge of the incidence of particular congenital defects is important from the scientific and practical point of view. Reliable information concerning the incidence of a given defect is possible after obtaining relevant criteria. The population of infants must be sufficiently large (at least 50 thousand consecutive births), including live births (both hospital and at home), and the diagnosis of the defect reliable (1).

One of the most common congenital defects is cleft lip and/or palate (2). It is estimated that the above-mentioned defect is diagnosed in 1 in 700 live births (3, 4). Recent literature data demonstrate the incidence of cleft lip/palate ranging between 1.06 and 1.79 per 1000 births (3-6). Cleft lip and/or palate is responsible for the numerous functional and esthetic disturbances, and the long-lasting treatment of these children must be multidisciplinary and multi-stage (1). The described pathologies associated with the incidence of cleft lip and/or palate is evidence that the above-mentioned is considered a significant medical and social problem, and the knowledge concerning its incidence shows the scale of the seriousness of the analysed issue.

Łódź is the third largest city in Poland in terms of population (more than 725 thousand inhabitants) and fourth in terms of surface area (293.25 km²). The city is located centrally in the country and considered an important academic and cultural center.

The aim of the study was to determine the prevalence of cleft lip and/or palate in children in Łódź during the period between 2001 and
2010, as compared to data obtained during the period between 1981 and 2000.

**MATERIAL AND METHODS**

In Poland, since April 1, 1997, The Polish Registry of Congenital Malformations (PRCM) is conducted. The above-mentioned registry collects data concerning the frequency and types of congenital defects throughout Poland. The Łódź region participates in the above-mentioned registry since the beginning.

Defects are reported in the Registry concerning children until the age of 24 months. The application form is completed by the physician from the department or outpatient clinic. In order to avoid the double entry of the disorder, the physician who first observed the malformation places the information in the Child’s Health Book. The application form is sent to the registry by post or via e-mail.

The registry showed data concerning the number of live births in Łódź during the period between 2001 and 2010, as well as reports of children with cleft lip and/or palate during the mentioned decade. Based on the obtained results we were able to determine the incidence of the defects during the summer months throughout the decade, considering the type of the defect, which side it was present, and child gender.

Statistical analysis was performed by means of the chi² test.

**RESULTS**

Amongst the 60109 live newborns, born in Łódź during the period between 2001 and 2010, 70 children were diagnosed with cleft lip and/or palate. Most deliveries were observed in 2009, while most children with cleft defects were born in 2008. During the study period the incidence of cleft defects per 1000 live births ranged between 0.46 and 1.98. This gave an average incidence of cleft births at 1.16/1000 live newborns (tab. 1).

Considering the type of defect isolated cleft palate was most common (31 patients), followed by cleft lip and palate (28 patients), and cleft lip (11 patients) (tab. 2). Cleft palate was more common in female than male patients (20:11), isolated cleft lip was more common in male patients (7:4), while cleft lip and palate was observed in the same number of both sexes (14:14) (tab. 3).

### Table 1. Incidence of cleft lip and palate in live newborns in Łódź during consecutive years (2001-2010)

<table>
<thead>
<tr>
<th>Years</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live newborns</td>
<td>5561</td>
<td>5443</td>
<td>5557</td>
<td>5790</td>
<td>5851</td>
<td>5916</td>
<td>6008</td>
<td>6540</td>
<td>6892</td>
<td>6551</td>
<td>60109</td>
</tr>
<tr>
<td>Number of children with cleft defects</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>11</td>
<td>3</td>
<td>8</td>
<td>13</td>
<td>6</td>
<td>3</td>
<td>70</td>
</tr>
<tr>
<td>Incidence of cleft defects per 1000 live newborns</td>
<td>1.08</td>
<td>1.1</td>
<td>1.08</td>
<td>1.38</td>
<td>1.88</td>
<td>0.51</td>
<td>1.33</td>
<td>1.98</td>
<td>0.87</td>
<td>0.46</td>
<td>1.16</td>
</tr>
</tbody>
</table>

### Table 2. Incidence of cleft lip and/or palate with determination of the malformation

<table>
<thead>
<tr>
<th>Type of cleft</th>
<th>Number of infants with cleft defect</th>
<th>1 child with cleft defect per number of live newborns</th>
<th>Number of cleft defects per 1000 births</th>
</tr>
</thead>
<tbody>
<tr>
<td>I + II</td>
<td>11</td>
<td>1: 5464</td>
<td>0.1830</td>
</tr>
<tr>
<td>III</td>
<td>31</td>
<td>1: 1939</td>
<td>0.5158</td>
</tr>
<tr>
<td>IV₃</td>
<td>23</td>
<td>1: 2613</td>
<td>0.3826</td>
</tr>
<tr>
<td>IV₂</td>
<td>5</td>
<td>1: 12022</td>
<td>0.0832</td>
</tr>
</tbody>
</table>


### Table 3. Cleft defect analysis according to gender

<table>
<thead>
<tr>
<th>Type of cleft defect</th>
<th>Male</th>
<th>Female</th>
<th>Male: Female ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>I + II</td>
<td>7</td>
<td>4</td>
<td>1.75</td>
</tr>
<tr>
<td>III</td>
<td>11</td>
<td>20</td>
<td>0.55</td>
</tr>
<tr>
<td>IV₃</td>
<td>12</td>
<td>11</td>
<td>1.09</td>
</tr>
<tr>
<td>IV₂</td>
<td>2</td>
<td>3</td>
<td>0.67</td>
</tr>
</tbody>
</table>
In case of children with cleft lip the defect was located on the right side in four newborns, and on the left side in one newborn. Unfortunately, in the remaining 6 registered cases the defect was considered as undefined (ICD-10 – Q36.9), thereby preventing from the allocation of the defect. Considering children with unilateral cleft lip, palate, and alveoloschisis, the right side of the body was occupied in nine cases, similarly as in case of the left side (9 newborns). The remaining five children were categorized with undefined cleft palate and unilateral cleft lip (ICD-10 – Q37.9).

**DISCUSSION**

The Department of Plastic, Reconstructive, and Esthetic Surgery, Medical University in Łódź conducts studies on the prevalence of cleft defects since 1982. The published data cover periods of ten years. The average incidence of cleft defects in children from the area of Łódź amounted to 1.16/1000 live newborns during the period between 2001 and 2010. This value is significantly lower, as compared to previously obtained data (p<0.0002) (tab. 4). The average incidence of cleft defects in the area of Łódź during the period between 1982 and 1991 amounted to 2/1000 live newborns; while between 1991 and 2000 – 1.89/1000 (8). These differences can be explained as follows: during the period between 1982 and 2000 data concerning cleft defects was obtained after the analysis of hospital and medical documentation from all obstetrics and gynecology hospitals (department of newborns) in Łódź, including home deliveries; secondly, not all congenital malformations may be diagnosed and reported, especially in case of non-public health care departments. Other authors presented similar data. Bird et al. estimated the incidence of cleft palate at 1.10/1000, while cleft lip at 1.06/1000 live newborns (5). Silberstein et al. estimated the incidence of cleft lip and palate at 1.067/1000 (9). The study undertaken by Dutch investigators also showed a similar incidence rate of the above-mentioned defect (1.13/1000) (10).

In the presented study isolated cleft palate was most commonly diagnosed (44.3%), followed by cleft lip and palate (40%), and cleft lip and alveoloschisis (15.7%). The same distribution of particular defects was observed during the years 1982-2000 (7, 8). Mitić et al. presented similar data: cleft palate – 44.2%, cleft lip and palate – 34.9%, and cleft lip – 20.9% (11). Similar results were obtained by Fedele et al. Cleft palate concerned 38.6% children, cleft lip and palate – 35.5%, and cleft lip – 24.1% (12). The cited data come from European countries. Based on worldwide literature data cleft lip and palate is the most common defect (46%), followed by isolated cleft palate (33%) and cleft lip (21%) (3). These differences may indicate the important role of ethnic and environmental factors in the etiology of cleft defects.

Unilateral cleft defects are much more frequent than bilateral defects. During the investigated period bilateral defects concerned approximately 7% of the children. Data obtained from previous decades are slightly higher, but still the bilateral defect is least common (1982-1991 – 13.4%; 1991-2000 – 10.2%) (7, 8). Isolated cleft palate defects are more frequently observed in female patients, which is in accordance with previous investigations (7, 8). However, unlike in previous studies the incidence of cleft lip and palate was similar, regardless the gender of the patient (7, 8). The described differences may be associated with the lower incidence of cleft defects over the years.

The presented study is not without limitations. The determination of all data is not possible. Currently, hospital departments keep medical records from the last 2-3 years, the

<table>
<thead>
<tr>
<th>Years</th>
<th>Number of births</th>
<th>Number of children with cleft defects</th>
<th>Incidence of cleft defects per 1000 live newborns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982-1991</td>
<td>92 093</td>
<td>186</td>
<td>2</td>
</tr>
<tr>
<td>1991-2000</td>
<td>67 212</td>
<td>127</td>
<td>1.89</td>
</tr>
<tr>
<td>2001-2010</td>
<td>60 109</td>
<td>70</td>
<td>1.16</td>
</tr>
</tbody>
</table>

p<0.000272
remaining documentation is transferred to the municipal archives, where obtaining information is very difficult. One should not forget that despite the obligation to notify the PRCM not all defects will be diagnosed, and thus, reported to the registry. This may be due to the fact that the defect is unnoticed and non-diagnosed, which in case of submucous soft palate cleft defects is quite common. Errors can also occur in case of improper and inadequate conduction of documentation.

CONCLUSIONS

1. In recent years there has been a significant reduction in the incidence of cleft defects in children from the area of Łódź.
2. Isolated cleft palate is the most common defect, while cleft lip is least common.
3. Isolated cleft palate defects are more common in female patients.
4. One should draw attention to the significant decrease in the number of births in Łódź.

REFERENCES


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