Newborn Screening Program for Congenital Hypothyroidism: eighteen years of experience in Buenos Aires Province, Argentina.

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Introduction

* Screening neonatal programs show a wide variation in the incidence of congenital hypothyroidism (CH) along the years, particularly for patients with eutopic thyroid gland.
* Variable frequencies of extratiroideal malformations have been reported.

Aims

* To up-to-date CH incidence and describe etiology, associated malformations and Down Syndrome (DS) in CH children detected by neonatal screening program in Buenos Aires province (PROYTEC).
* To search differences between permanent CH (PCH) and transient forms (TCH) in patients with eutopic thyroid gland.

Methods

* Every newborn (NB) with positive screening results for CH was referred to our confirmation center between 1995 and 2015.
* CH was confirmed by TSH >25 uU/ml and < T4 10 ug/dl.
* Two periods were analyzed: 1995-2001 (I) and 2002-2015 (II).
* Incidence was calculated in each period.
* We described associated malformations and DS.

Results

* Of 8,499,519 evaluated NB, 1331 were confirmed (F:M, 2:1).
* They were treated with a mean LTd of 12.43±2.12 ug/kg/day.
* Median age at diagnosis was 18 (14-26) days.

Figure 1. Associated malformations in all patients with CH

![Figure 1](image1)

Table 1. Variables comparison between PCH and TCH

<table>
<thead>
<tr>
<th></th>
<th>Permanent (n=102)</th>
<th>Transient (n=21)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macrosomia</td>
<td>56 (54.9%)</td>
<td>11 (52.4%)</td>
<td>0.079</td>
</tr>
<tr>
<td>Delivery</td>
<td>34 (46.0%)</td>
<td>10 (50%)</td>
<td>0.146</td>
</tr>
<tr>
<td>TSH (uU/ml)</td>
<td>79.5 (24.3, 299.9)</td>
<td>77.2 (15.4, 192.5)</td>
<td>0.660</td>
</tr>
<tr>
<td>T4 (ug/dl)</td>
<td>3.7 (1.2, 7.8)</td>
<td>5 (2, 7.5)</td>
<td>0.259</td>
</tr>
<tr>
<td>Age at start of treatment (days)</td>
<td>23.5 (16, 34.3)</td>
<td>24 (15, 35)</td>
<td>0.464</td>
</tr>
<tr>
<td>Age at reconfirmation (years)</td>
<td>3.29 (3.05, 3.66)</td>
<td>3.15 (3.03, 3.57)</td>
<td>0.288</td>
</tr>
<tr>
<td>Birth weight (grams)</td>
<td>3200 (2765, 3985)</td>
<td>2940 (2658, 3396)</td>
<td>0.106</td>
</tr>
<tr>
<td>Weight at reconfirmation (grams)</td>
<td>15050 (13725, 16175)</td>
<td>14900 (13900, 15900)</td>
<td>0.413</td>
</tr>
<tr>
<td>Doses at start of treatment (ug/kg/day)</td>
<td>11.44 ± 2.8</td>
<td>11.50 ± 2.71</td>
<td>0.924</td>
</tr>
<tr>
<td>Doses at reconfirmation (ug/kg/day)</td>
<td>3.22 ± 0.49</td>
<td>2.29 ± 0.74</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Table 1

Figure 2. Congenital hypothyroidism etiologies

![Figure 2](image2)

- Global CH incidence was 1.5±0.5 NB.
- CH incidence in each period was 2011:1.2425, 2012-2015: 1.963.
- Twenty-three CH children had DS.

Conclusions

1. Last years’ CH incidence has increased in this program.
2. Associated malformations were found in 3.45% of these CH patients.
3. Transient CH forms showed a low frequency (5%).
4. CH patients who required lower LTd at reevaluation were likely to have TCH forms.

The authors declare that there is no conflict of interest.

References

* Earlier re-evaluation may be possible in pediatric patients with ectopic congenital hypothyroidism requiring lower L-thyroxine doses. Min Sun Cho, Gyung Sun Cho, So Hyun Park, Min Ho Jung, Byung Ryou Soh, Dae Gyun Ko. Ann Pediatr Endocrinol Metab 2014;19:141-145.