INTRODUCTION

- Serum levels of insulin-like growth factor-1 (IGF-1), serum levels of IGF binding protein-3 (IGFBP-3) and the ratio IGF-1/IGFBP-3 (as SDS, as logarithm, as a specific formula) - effective and stable parameters evaluating the safety and efficacy of growth hormone (GH) treatment
- Still no unified method to compare these parameters
- All parameters are not easy to calculate and hence, not routinely used in daily practice

METHOD

- 72 GHD patients (73.8% boys, age range 1-18 years), on GH therapy
- Collected serum levels of IGF-1 (ng/ml) and IGFBP-3 (ng/ml)
- IGF-1 to IGFBP-3 - calculated as a simple ratio (without any prior adjustments)
- Blood samples (n=104) were analyzed at different points of the patients’ observation (2019-2020): before starting of therapy (n=7), during the 1st year of treatment (n=26), during the 2nd year of treatment (n=115) and after 2 years of treatment (n=56)

AIM

The aim of this study is to compare the direct ratio of the serum levels of IGF-1 and IGFBP-3 with established models in order to propose a new reliable and easy to use in the everyday practice tool for supporting the assessment of the GH therapy efficacy and safety in GH deficient (GHD) patients.

RESULTS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>n (blood samples)</th>
<th>Before treatment</th>
<th>1st year</th>
<th>2nd year</th>
<th>After 2 years of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGF-1 (ng/ml)</td>
<td>7</td>
<td>118.8 ± 75.8</td>
<td>263.9 ± 86.2</td>
<td>233.8 ± 125.1</td>
<td>245.5 ± 102.8</td>
</tr>
<tr>
<td>IGFBP-3 (ng/ml)</td>
<td>7</td>
<td>4100 ± 1776</td>
<td>5850 ± 2130</td>
<td>5010 ± 1400</td>
<td>5300 ± 1150</td>
</tr>
<tr>
<td>IGF-1/IGFBP-3 ratio</td>
<td>7</td>
<td>0.027 ± 0.009 (median 0.026)</td>
<td>0.042 ± 0.023 (median 0.036)</td>
<td>0.045 ± 0.016 (median 0.043)</td>
<td>0.044 ± 0.023 (median 0.043)</td>
</tr>
<tr>
<td>Correlation of IGF-1/IGFBP-3 ratio with SDS of IGF-1/IGFBP-3²</td>
<td>r=0.69 p=0.05</td>
<td>r=0.72 p=0.05</td>
<td>r=0.75 p=0.05</td>
<td>r=0.73 p&lt;0.05</td>
<td></td>
</tr>
<tr>
<td>Correlation of IGF-1/IGFBP-3 ratio with IGF-1/IGFBP-3 ratio as specific formula³</td>
<td>r=0.72 p&lt;0.05</td>
<td>r=0.83 p&lt;0.05</td>
<td>r=0.89 p&lt;0.05</td>
<td>r=0.89 p&lt;0.05</td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSIONS

The results of this study show that the proposed simple calculation of IGF-1/IGFBP-3 ratio could be used as easily accessible index during GH treatment.

Its relation with other parameters of efficacy and safety as well as its behavior in other GH treated conditions remains to be further elucidated.

REFERENCES


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Medical University Varna
First Paediatric Clinic at UMHAT “St. Marina”, Varna

Kamelia Rankova
Medical University Varna
Bulgaria

CONTACT INFORMATION

E-mail: kam.bachvarova@yahoo.com