**Role of insulin like growth factors on the growth parameters in children with acquired hypothyroidism**

**RUCHI GOEL, SANGEETA YADAV, TK MISHRA, MUKTA MANTAN**  
Department of Pediatrics & Department of Biochemistry, Maulana Azad Medical college and associated Lok Nayak Hospital & GIPMER Hospital, New Delhi, India

**BACKGROUND**  
- Thyroid hormones have an important role in somatic & skeletal growth by regulating the Growth hormone-insulin like growth factor (IGF) axis  
- Growth retardation seen in acquired hypothyroidism manifests later in life which according to limited studies on Indian children is attributable to both thyroid profile and IGF.

**OBJECTIVE**  
To evaluate insulin like growth factors in children with acquired hypothyroidism and their effect on the growth parameters

**MATERIALS AND METHODS**  
- Approved by ethical committee of institute  
- Study design- Cross sectional  
- Twenty seven children with acquired hypothyroidism aged 5-18 years old recruited and evaluated after taking consent  
- Growth hormone deficient or multiple pituitary hormone deficient or children with altered liver functions were excluded  
- Height, weight, body mass index (BMI) recorded & interpreted on New IAP growth charts 2015.  
- Estimation of thyroid profile done by electro-chemiluminiscence and IGF-1, IGF binding protein-3 (IGFBP-3) by enzyme linked immunosassay (ELISA) kit.

**BIOCHEMICAL PROFILE**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>T3 (2.3-4.2 μg/dl)</td>
<td>2.62±1.81</td>
</tr>
<tr>
<td>T4 (4.6-12 μg/dl)</td>
<td>6.76±4.97</td>
</tr>
<tr>
<td>TSH (0.7-6.4 μIU/ml)</td>
<td>19.81±30.7</td>
</tr>
<tr>
<td>IGF-1 (ng/ml)</td>
<td>206.5±11.3*</td>
</tr>
<tr>
<td>IGFBP-3 (ng/ml)</td>
<td>4493±2375.67</td>
</tr>
</tbody>
</table>

*Mean IGF-1 was significantly low (<0.05) as compared to healthy reference population.

**RESULTS**

- Mean age of diagnosis- 9.52 ± 2.31 years with a range of 5 to 13 years with the Male : Female ratio of 0.42:1.  
- Mean age of recruitment in the study- 13.77 ± 3.09 years  
- Mean weight- 35.89±11.67 kg (-1.09SD), only 5/27 (18.5%) were underweight  
- Mean height- 138 ± 15.4 cm (-2.53SD), 15/27 (55.5%) were stunted  
- BMI (kg/m²)- 18.25 ± 3.26 (-0.34SD)- 23/27 (85.1%) had normal BMI  
- Negative correlation observed between TSH & IGF-1 though p>0.05

![Significant negative correlation between TSH & height (r=0.408, p=0.035)](image)

![Significant correlation observed in between serum levels of IGF-1 & IGFBP-3 (r= 0.486, p= 0.010).](image)

**EFFECT OF INSULIN LIKE GROWTH FACTORS ON ANTHROPOMETRY**

- Positive correlation between height & IGF-1 (p<0.05).  
- No correlation of IGFBP-3 was observed with height or TSH.  

![Significant correlation between weight & serum IGFBP-3 (r = 0.479, p = 0.011)](image)

![Significant correlation between BMI & serum IGFBP-3 (r = 0.538, p=0.004)](image)

**CONCLUSION**

- Height is the most affected growth parameter with 55.5% of the cohort (15/27) being stunted.  
- Growth retardation is attributable to both abnormal thyroid profile and reduced levels of serum IGF-1.  
- IGFBP-3 had positive role in weight and BMI of children with acquired hypothyroidism though no role was established with stunting.

**REFERENCES**


Disclosure: No conflict of interest to the best of my knowledge