

# Growth catch-up on acquired hypothyroidism presenting with growth delay

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## INTRODUCTION

Hypothyroidism is a frequent endocrinopathy in pediatric age. The most common manifestation in children is growth delay with decreased height velocity. Symptoms can be insidious and, if not identified and treated, may result in short stature.

## PURPOSE

To evaluate stature catch-up after replacement therapy in children with primary acquired hypothyroidism.

## MATERIAL AND METHODS

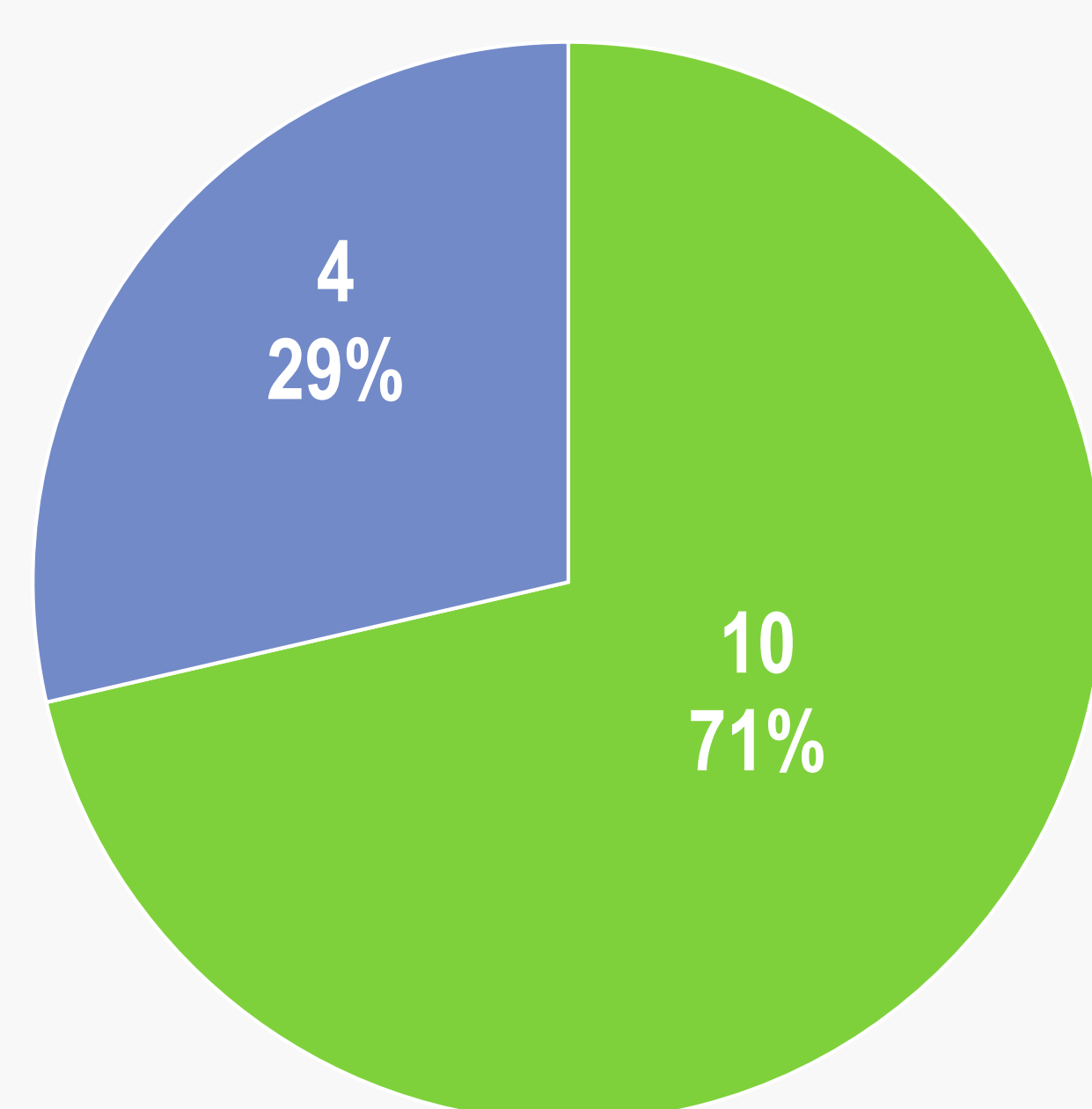
Retrospective study of all children with primary acquired hypothyroidism followed at our tertiary pediatric hospital from 1998-2017 and presenting with growth delay. Statistical analysis with SPSS22® ( $p < 0,05$ ).

## RESULTS

### DEMOGRAPHIC CHARACTERIZATION

N = 14

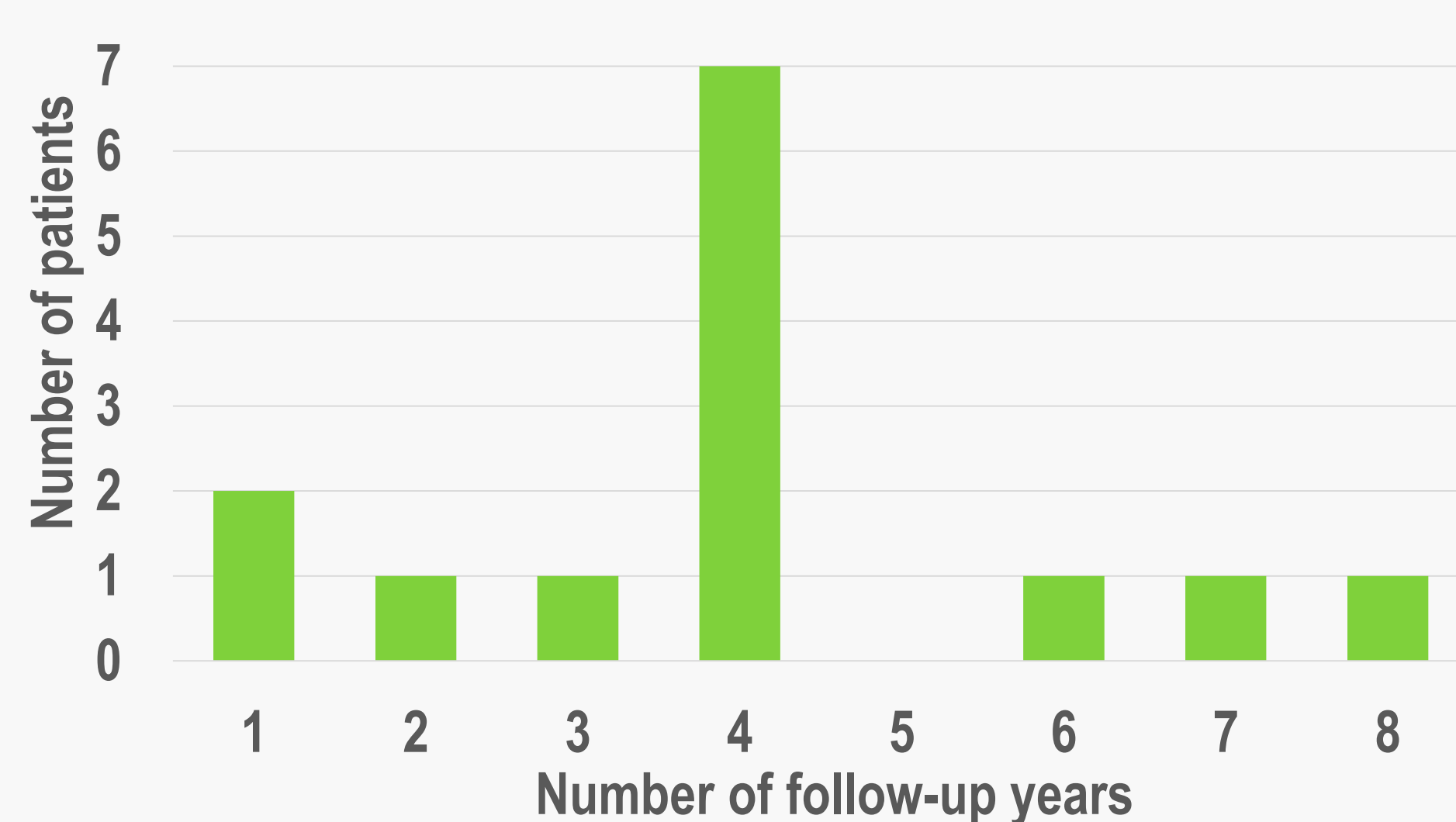
Gender



■ Female ■ Male

Mean age at diagnosis  $10 \pm 3,5$  years  
Minimum 4 years  
Maximum 16 years

Follow-up time



Mean follow-up time  $4 \pm 2$  years

### STATURE EVOLUTION

N=14	cm	Z-score	p
<b>Stature</b>			
At diagnosis	$130,6 \pm 16,46$	$-1,7 \pm 0,96$	-
At last follow-up visit	$153,3 \pm 15,12$	$-0,8 \pm 0,97$	-
<b>Global height gain</b>	<b><math>22,7 \pm 1,34</math></b>	<b><math>0,90 \pm 0,56</math></b>	<b><math>&lt;0,001</math></b>
<b>Stature evolution along treatment</b>			
At diagnosis	$130,6 \pm 16,46$	$-1,7 \pm 0,96$	
<b>Height gain</b>		<b><math>0,48 \pm 0,44</math></b>	<b><math>0,001</math></b>
At the end of the 1st year of treatment	$137,8 \pm 16,45$	$-1,3 \pm 0,89$	
<b>Height gain</b>		<b><math>0,33 \pm 0,42</math></b>	<b><math>0,020</math></b>
At the end of the 2nd year of treatment	$144,5 \pm 16,94$	$-1,1 \pm 1,06$	
<b>Height gain</b>		<b><math>0,06 \pm 0,17</math></b>	<b><math>0,263</math></b>
At the end of the 3rd year of treatment	$149,8 \pm 17,33$	$-0,7 \pm 1,02$	

Mean family target height (FTH) was  $162,3 \pm 8,4$  cm ( $-0,9 \pm 0,79$  sds)

	Stature at first visit (Z-score)	Stature at last follow-up visit (Z-score)	Height gain (Z-score)	FTH (Z-score)	Treatment duration (years)
Diagnosis before puberty	$-1,5 \pm 0,77$	$-0,6 \pm 1,07$	$0,9 \pm 0,64$ $p=0,006$	$-0,6 \pm 0,69$	$4,6 \pm 2,30$
Diagnosis during puberty	$-2,0 \pm 1,21$	$-1,1 \pm 0,95$	$0,9 \pm 0,44$ $p=0,001$	$-0,7 \pm 0,76$	$3,0 \pm 1,27$

## CONCLUSION

Replacement therapy with levothyroxine had a significant positive impact on stature gain, allowing children to catch-up their genetic potential

- ✓ Height gain was directly correlated with treatment duration (Pearson correlation 0,9;  $p < 0,0001$ )
- ✓ Growth catch-up was achieved at the third year of treatment
- ✓ Global significative height gain
- ✓ Genetic potencial only achieved in children diagnosed and treated before puberty

### REFERENCES

- Gutch M, Kumar S, Razi SM, Gupta A, Kumar S, Gupta KK, Singh MM. Prevalence of short stature in juvenile hypothyroidism and the impact of treatment on various skeletal manifestation and growth velocity in a tertiary care center. CHRISMED J Health Res 2015;2:251-6
- Devru, N., Dharmshaktu, P., Kumar, G., et al. (2018). Phenotypic presentation of adolescents with overt primary hypothyroidism. Journal of Pediatric Endocrinology and Metabolism, 31(4), pp. 415-420. Retrieved 9 Sep. 2018, from doi:10.1515/jpem-2017-0304
- GUTCH, Manish et al. Unusual Manifestations Associated with Primary Hypothyroidism: Experience from A Tertiary Care Health Center. Journal of the ASEAN Federation of Endocrine Societies, [S.l.], v. 32, n. 1, p. 60, may 2017. ISSN 2308-118X. Available at: <http://asean-endocrinejournal.org/index.php/JAFES/article/view/391>