

# Early onset Growth Hormone (GH) replacement in GH deficiency: Is neonatal hypoglycemia important for long term follow-up?

Ayfer ALIKASIFOGLU, Dicle CANORUC EMET, Z. Alev OZON, E. Nazli GONC, Nurgun KANDEMIR  
Hacettepe University Division of Pediatric Endocrinology, Ankara, Turkey

## INTRODUCTION

GH deficiency may present with different symptoms at different ages. Those who apply during infancy may present with hypoglycemia. Data is scarce about the follow up of patients with early onset GH deficiency associated with hypoglycemia. The aim of this study is to analyze and determine differentiating characteristics of early onset GH deficient children with hypoglycemia both at diagnosis and during follow up.

## METHODS AND MATERIALS

Clinical records of GH deficient patients <3 years of age followed at Hacettepe University Division of Pediatric Endocrinology were reviewed. Twenty three patients were grouped into two groups with respect to hypoglycemia (i.e hypoglycemics vs non-hypoglycemics). Pre-treatment clinical and laboratory parameters such as birthweight, initial growth factor and GH as well as other pituitary hormone levels, and longitudinal growth and weight indices of patients were compared in hypoglycemics vs non-hypoglycemics.

## RESULTS

Thirteen children out of 23 had hypoglycemia. 10/13 (77%) of hypoglycemics and 8/10 (80%) of non-hypoglycemics had combined pituitary hormone deficiencies. There was no statistically significant difference between the hypoglycemics and non-hypoglycemics in terms of gender and multiple pituitary hormone deficiencies (p=0,7, 0,66 respectively). The auxologic parameters and biochemical profile at the time of diagnosis are shown on Table 1. Age at diagnosis and GH replacement was earlier in hypoglycemics (p=0.02, <0.01 respectively) (Table 1). Improvement in length Z-score as well as growth velocity Z-score in the course of GH replacement were similar in the two groups (Figures 1,2). Weight for length/height Z-score tended to increase in the 36<sup>th</sup> month of GH replacement (p=0.073), which was more significant in the hypoglycemics (p=0.04) rather than non-hypoglycemics (p=0.83) (Figure 3.). Only 2 patients were obese at onset (1 hypoglycemic), however during follow up 7 patients (6 hypoglycemic) developed obesity which was significant (p=0,08).

Table 1. Auxologic parameters and biochemical profile at time of diagnosis

	Hypoglycemics (n:13)	Non-hypoglycemics (n:10)	p
Birth weight (gr)*	3307±630,5	2979±576	0,2
Gestational age (week)**	38 (34-41)	38 (34-38)	0,45
Initial length Z score*	-3,73±1,67	-3,22±1,91	0,5
Weight for length/height Z score*	101 ± 11,8	99± 16,8	0,78
Growth velocity Z score before treatment*	-2,6±2,01	-2±1,64	0,47
Peak GH (µg/L)**	0,05 (0,05-6,05)	1,02 (0,01-7,0)	0,052
Age of onset of GH treatment (month)*	12,2±9,7	27,8±5,4	<0,01
Basal IGF-1 (ng/ml)*	9,3±6,2	10,3±6,9	0,73
Peak cortisol (µg/dl)*	16,02±10,4	20,7±9,1	0,34
Prolactin (ng/ml)**	0,6 (0,3-22,5)	14 (3-36,7)	0,01

\*mean±sd, \*\* median(min-max)

Figure 1. Height/length mean Z-scores

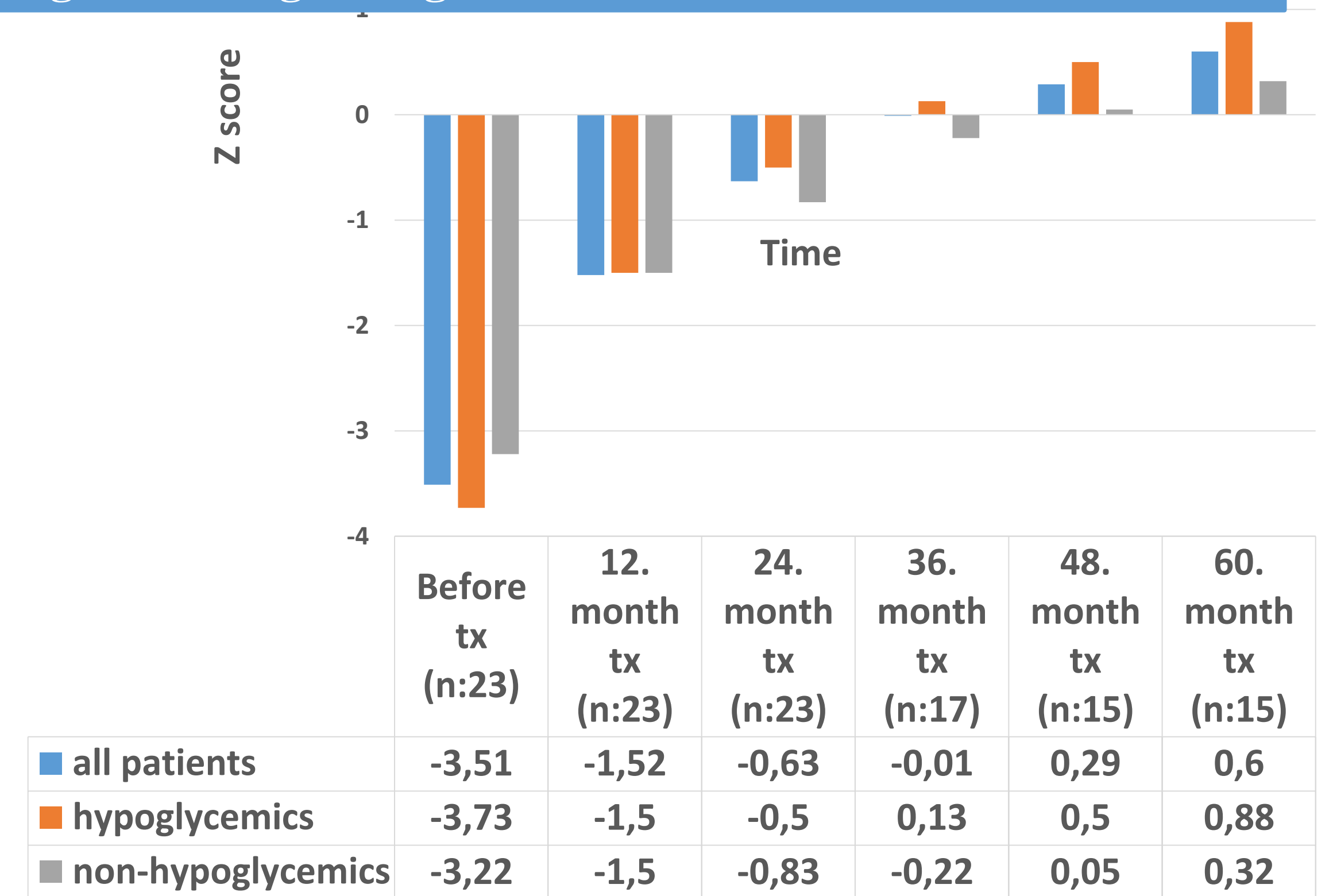


Figure 3. Weight for height/length mean Z-scores

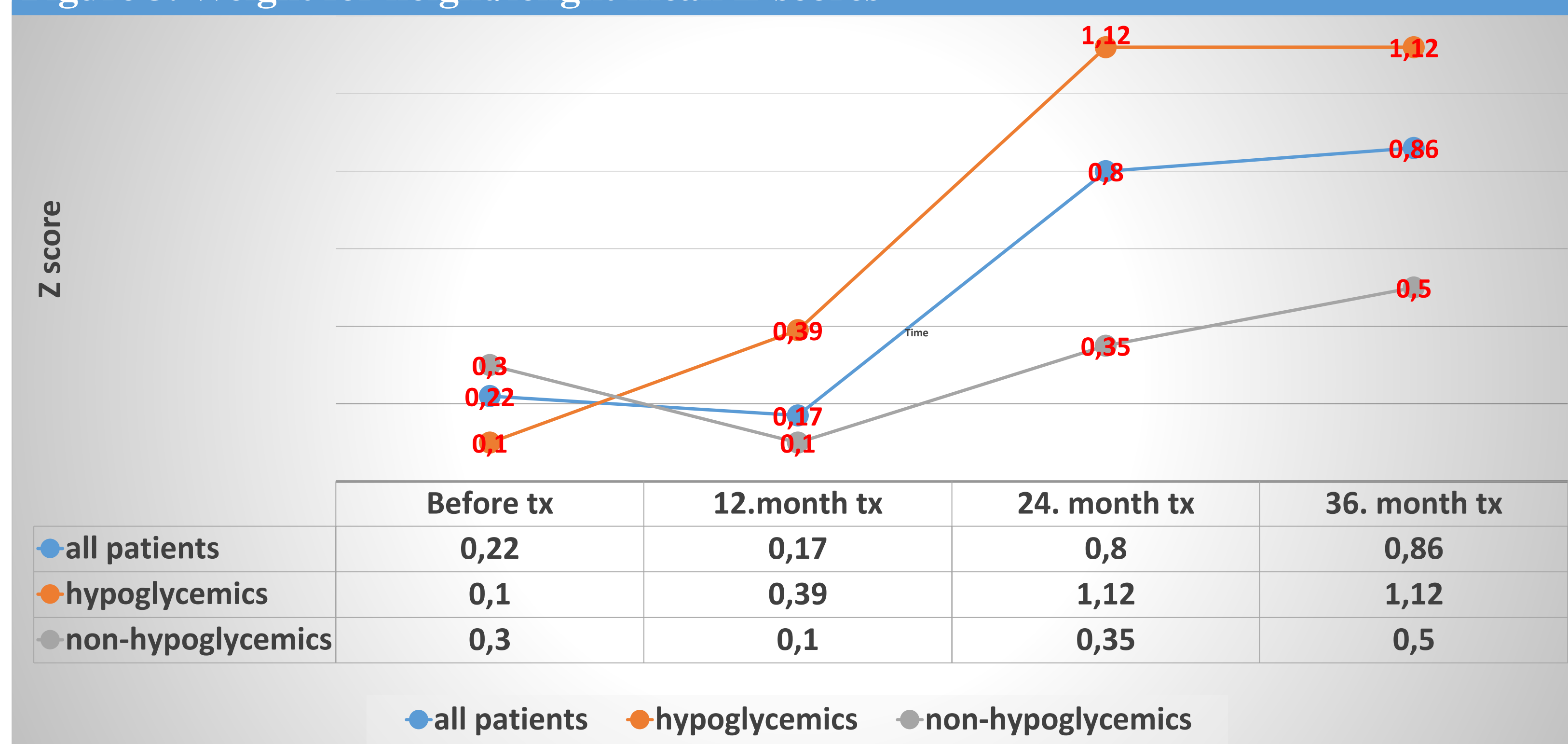
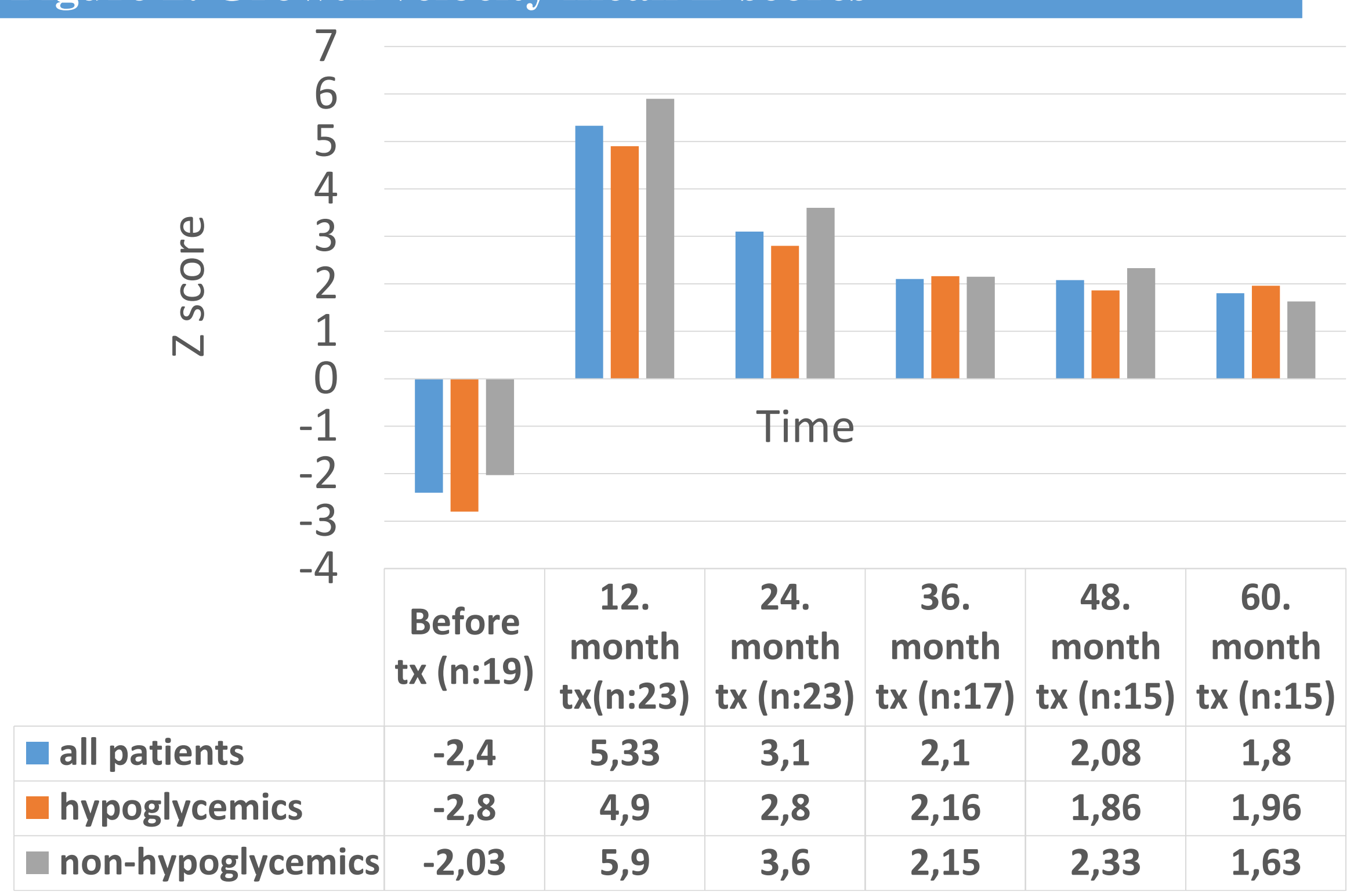


Figure 2. Growth velocity mean Z-scores



## CONCLUSIONS

- Hypoglycemia presentation in GH deficient children allows for earlier diagnosis.
- Hormone profiles are similar in two groups; so why some growth hormone deficient children are presenting with hypoglycemia but some of them are not is controversial.
- Growth under GH treatment is similar in hypoglycemics and non-hypoglycemics groups, but hypoglycemics gain more weight. Further studies are needed to explain this finding.

### REFERENCES

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