



IMPACT OF RECOMBINANT HUMAN GROWTH HORMONE ON HEIGHT IN CHILDREN WITH CHRONIC KIDNEY DISEASE

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Background

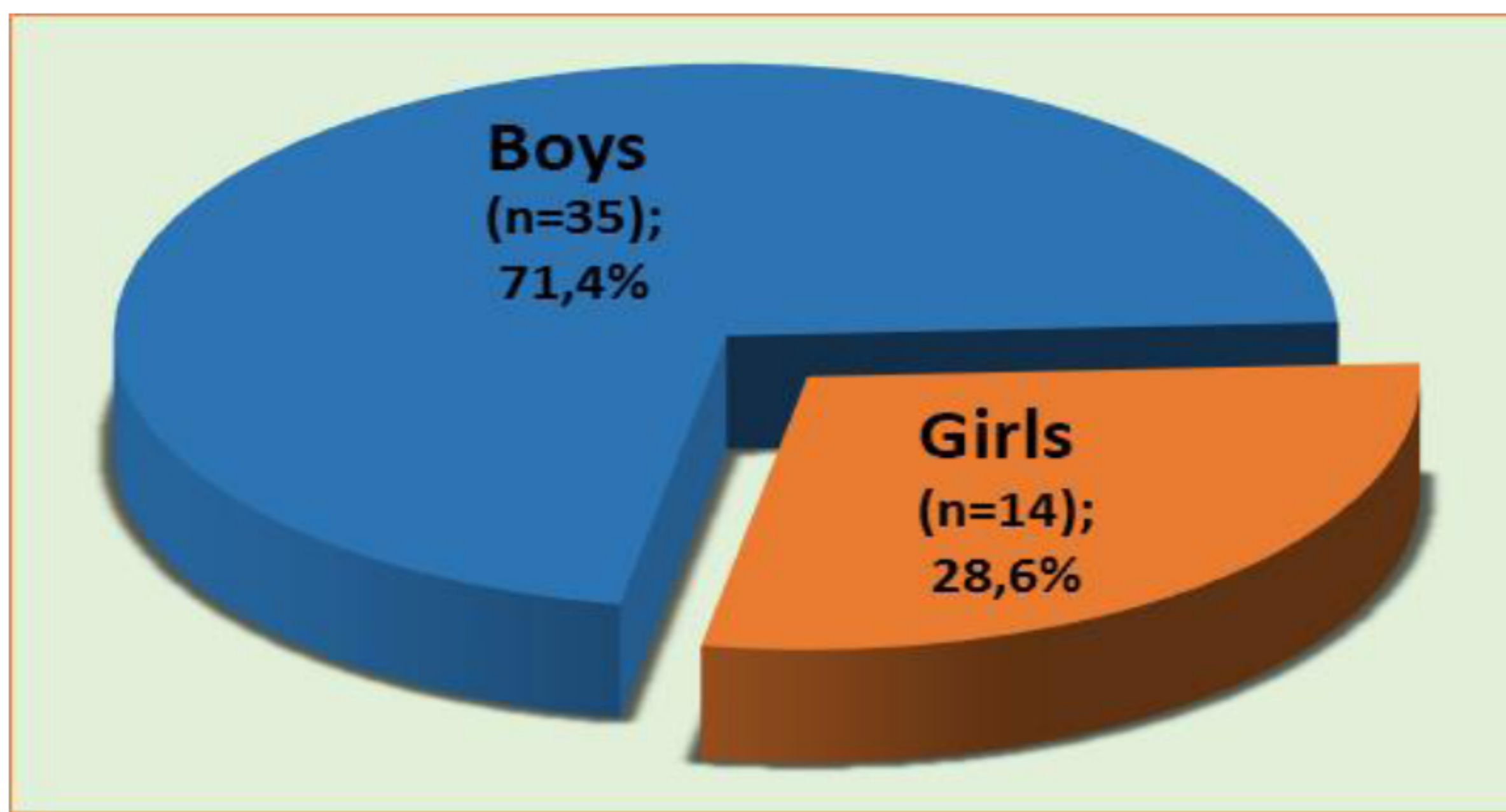
Chronic kidney disease (CKD) is one of the most common indications for treatment with recombinant human growth hormone (rhGH). The aim of our study was to investigate the effect of rhGH therapy in pediatric patients with different stages of CKD.

Materials and Methods

49 children (35 boys and 14 girls) aged from 0-18 years (mean age 9,01 ± 4,28) (fig. 1) and proven CKD and height retardation were treated with rhGH by a single subcutaneous injection every evening at dose of 9,4 mg/m²/weekly and followed up for a period of 14 years (mean 3,48 years). The height measurements before and after treatment were analysed as standard deviation score (SDS).

Results

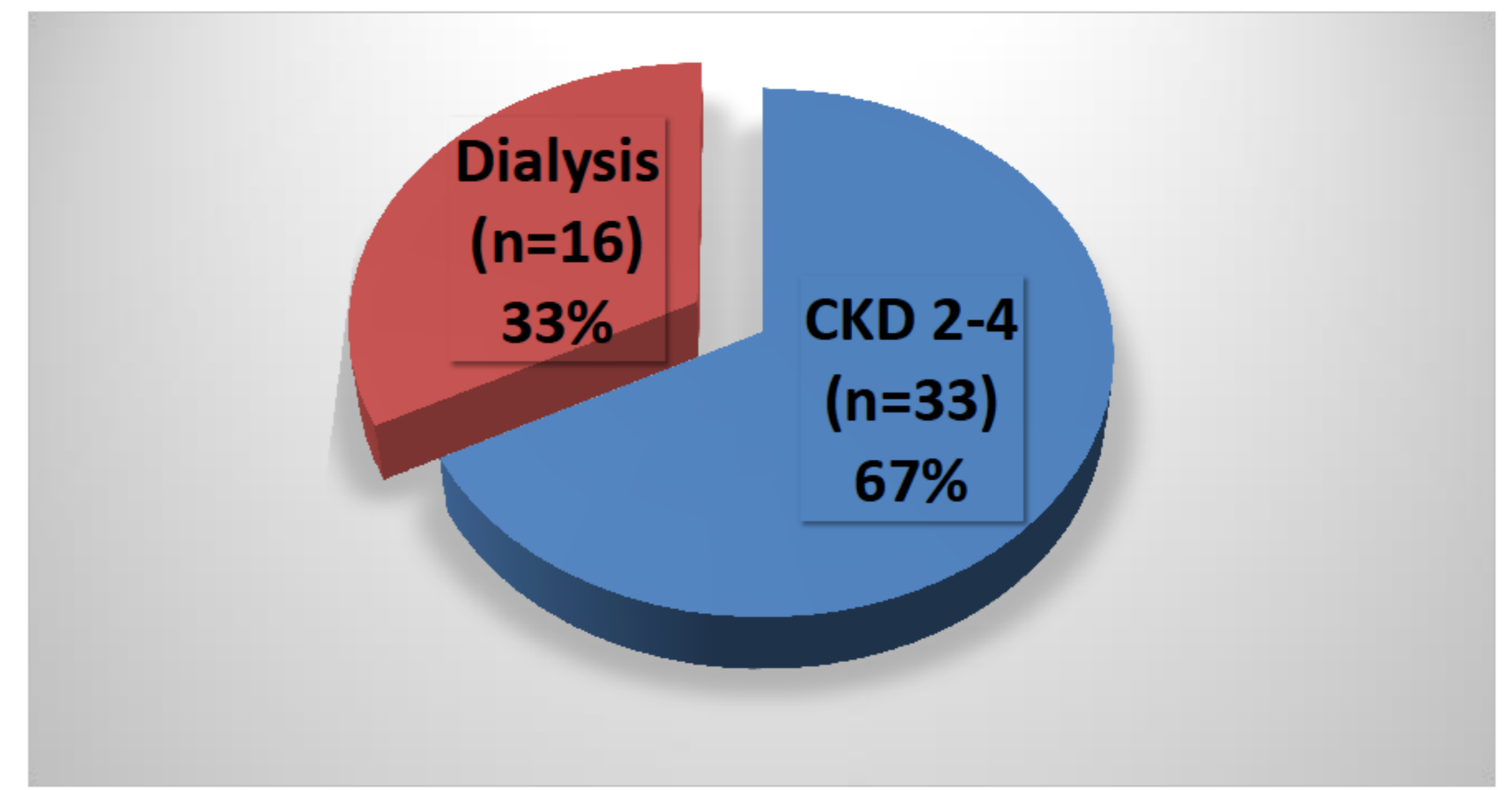
According to the classification of CKD the patients were divided into two groups – 33 had CKD stage 2-4, and 16 had CKD stage 5 (fig.2). At disease onset 69,40 % of the children had severe growth retardation defined by height SDS less than -1,88; 26,50 % had moderate height retardation defined by height SDS between -1,88 and 1,00 and 4,10 % had mild height retardation defined by height SDS greater than 1,00 (fig. 3). The mean height SDS during the treatment period increased from -2,75 at baseline to -1,64 at treatment termination (fig. 4, 5). The height increased by 7,57 % as measured at 12 month (p = 0,021) and by 4,71% at 48 month of treatment (p = 0,013) (fig. 6). The reached height correlated to the disease stage at the baseline and the duration of the rhGH treatment.



Height decrease /SDS/ in age groups

	Total patients		Age at disease onset							
	N	%	≤ 1 y.		1-6 y.		6-12 y.		>12 y.	
Total	49	100,0	25	100,0	6	100,0	12	100,0	6	100,0
SDS < -1,88	34	69,4	19	76,0	4	66,7	6	50,0	5	83,3
SDS -1,88 + -1,00	13	26,5	6	24,0	2	33,3	5	41,7	0	0,0
SDS > -1,00	2	4,1	0	0,0	0	0,0	1	8,3	1	16,7

Fig. 1



Height and stage of CKD

	Period	N	SDS (height)					p
			Mean	SD	Median	Min	Max	
CKD	Disease onset	15	-2,76	0,99	-2,77	-4,29	-1,40	0,023
	36 months later	15	-1,95	1,15	-2,07	-3,51	0,37	
Dialysis	Disease onset	7	-3,32	0,83	-3,79	-3,99	-1,82	0,237
	36 months later	7	-3,67	1,44	-4,08	-6,03	-1,68	

Fig. 2

Fig. 3

Fig. 4

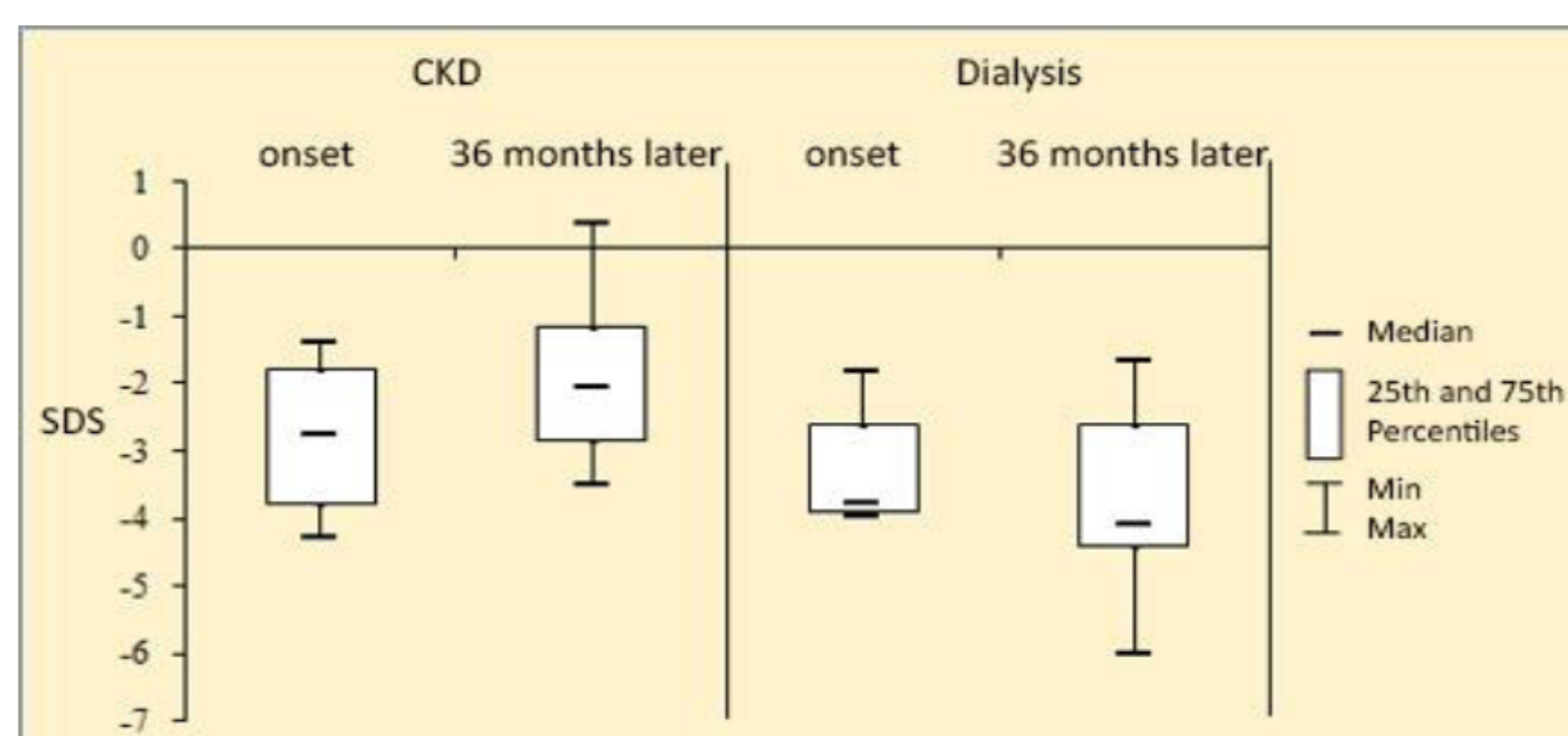


Fig. 5

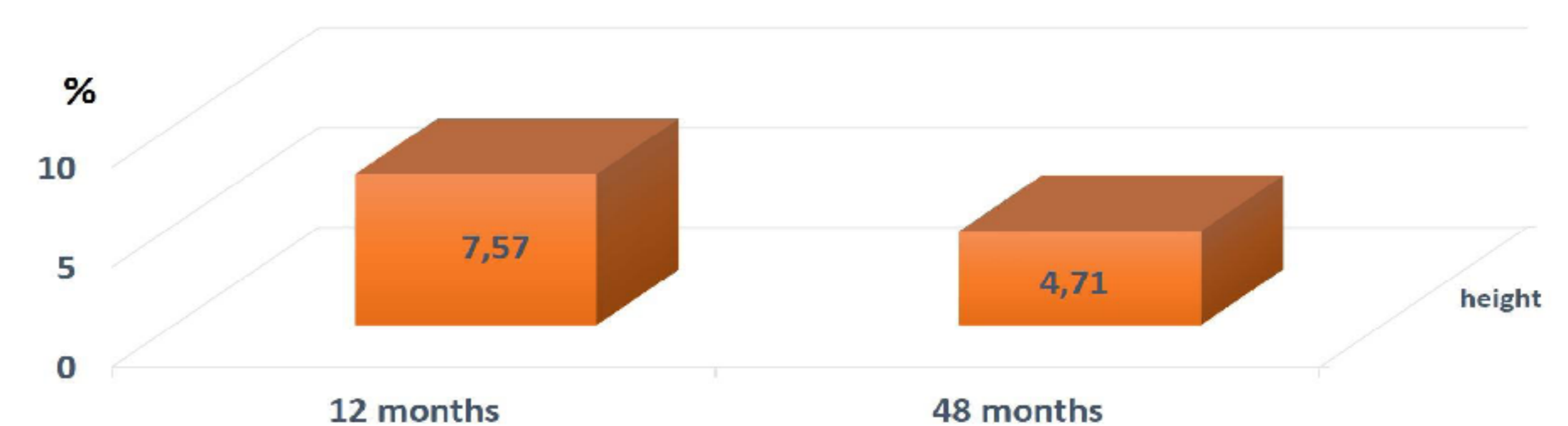


Fig. 6

Conclusions

The early and continuous treatment with rhGH in children with CKD stage 2-5 increases the height velocity in this subgroup of pediatric patients and should be taken into account in the treatment program of CKD.

Bibliography

- Seikaly M, Salhab N. and all. Use of rhGH in children with CKD: lessons from NAPRTCS; *Pediatr Nephrol.* 2007 22: 1195-1204
- Mehls O, Tonshoff B. and all. The use rhGH in Short Children with CKF; *The Journal of Pediatr Endocrinology,* 1994 7,2 107-113