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Evaluation of prepubertal patients with suspected neurosecretory dysfunction for growth hormone secretion (NSD): diagnostic steps and treatment response

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Conclusion: According to our results, analysing overnight GH-secretion remains to only method to identify children with neurosecretory dysfunction for GH-secretion (NSD). Age, auxologic data, delay of bone age and IGF-I/IGFBP3-levels are not different between patients and controls. Yet, as response to GH-treatment is comparable to results in idiopathic GH-deficiency (GHD), it is worth to consider this diagnosis.

Background / Aims: Existence and diagnostic procedures of neurosecretory dysfunction (NSD) are still a matter of debate. The aim of our study was to analyse prediagnostic data of short-statured children with pathologic and normal spontaneous GH-secretion and to evaluate the effect of GH-therapy in NSD-patients.

Methods: In 90 children aged 3 to 16 years 12-hour night profiles for GH-secretion (samples every 30 minutes) were performed (unicentric). Children fulfilling 2 of the 3 following criteria were diagnosed having NSD: number of peaks ≤ 3, maximal GH-secretion < 8,0 ng/ml, mean secretion < 3,2 ng/ml. By this, 49 children were classified having NSD and treatment with recombinant GH was started. Their auxologic data, IGF-I-/IGFBP3-levels, GH-stimulation tests as well as spontaneous overnight GH-secretion were analysed and compared to the data of the 41 children with normal spontaneous GH-secretion. Additionally, follow-up auxological data of the NSD-patients during GH-treatment were collected.

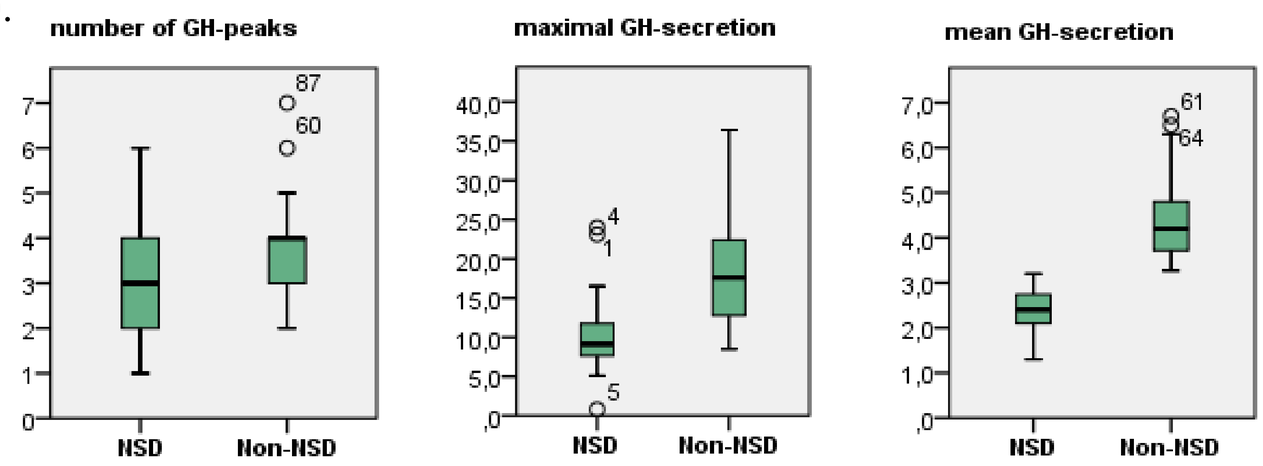
Results:

- Age, prediagnostic auxologic data (height, weight, HSDS, HV, HV-SDS), delay of bone age and IGF-I/IGFBP3-levels did not differ between the two groups.

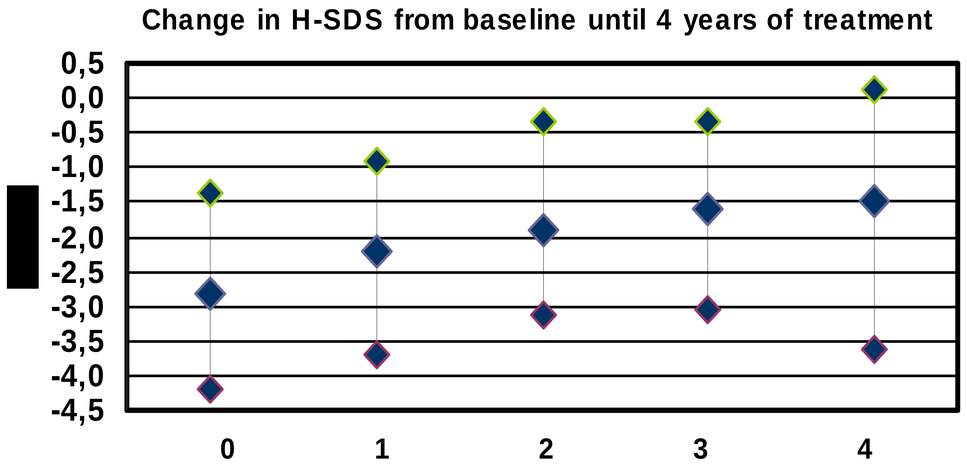
		age (years)	weight (kg)	height (cm)	H-SDS	HV (cm/year)	HV-SDS	dBA (years)	IGF-SDS	IGFBP3-SDS
NSD-group	n	49	47	49	49	49	48	49	47	45
	mean	9,73	22,94	120,85	-2,82	4,32	-1,03	1,6	-1,81	-0,62
	median	10,33	22	124,4	-2,75	4,4	-1,36	1,67	-2	-0,71
	SDS	2,97	8,43	15,83	0,64	1,69	2,04	1,21	0,67	0,9
Non-NSD group	n	41	40	41	41	41	41	40	41	39
	mean	10,42	24,39	125,18	-2,91	4,76	-0,06	1,82	-1,79	-0,73
	median	10,33	21,9	122	-2,92	4,6	-0,87	2,21	-1,78	-0,7
	SDS	3	8,47	16,33	0,98	2,13	2,76	1,68	0,85	0,76
statistical difference	p-value	0,275	0,429	0,206	0,612	0,281	0,06	0,468	0,894	0,552

- Instead, for all 3 criteria used for evaluation of the 12-hour night profiles (number of peaks, maximal and mean GH-secretion) a significant difference between NSD- and Non-NSD-children was found (p-value < 0,005 for all parameters; maximal and mean GH-secretion shown in ng/ml).

12-hour night profiles		number of peaks	maximal secretion	mean secretion
cut-off		3,0	8	3,20
NSD-group	mean	2,9	10,2	2,40
	median	3	9,2	2,40
	SDS	1,1	4,1	0,50
Non-NSD-group	mean	3,9	18,3	4,40
	median	4	17,6	4,20
	SDS	1	6,6	0,90



- Children with NSD showed a good response to GH-treatment after 1 year (DHSDS: +0,77 +/- 0,48, DHV-SDS: 4,4 +/- 3,51 cm/year) as well as until after 4 years (DHSDS: +1,51 +/- 0,75, DHV-SDS: +0,77 +/- 1,92 cm/year). These results are similar to those of children with idiopathic GHD.



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