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.
- 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).
- 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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