Growth hormone secretory pattern in non-obese children and adolescents with Prader-Willi syndrome.

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The aetiology of impaired growth hormone (GH) secretion in Prader-Willi syndrome (PWS) remains controversial due to the common occurrence of obesity. To further clarify whether suboptimal GH secretion in PWS is an artefact of excess weight, we evaluated both GH immunological activity and GH bioactivity after arginine administration in 23 non-obese PWS patients [seven females, aged 6.9 ± 0.9 years, body mass index (BMI) SDS 0.63 ± 0.26], in comparison with a control group of 32 healthy subjects, matched for age, gender and BMI (10 females, aged 7.9 ± 0.3 years, BMI SDS 0.21 ± 0.20). Serum GH concentration was measured with a time-resolved immunofluorometric assay (IFMA), while GH bioactivity was evaluated by the Nb2 cell bioassay. Serum IGF-I concentrations were measured by double-antibody RIA. GH mean peak after pharmacological stimulation was significantly lower in PWS individuals compared with controls when measured either by IFMA (6.05 ± 1.23 µg/L vs. 23.7 ± 1.06 µg/L, p<0.0001) or by Nb2 (6.87 ± 0.55 µg/L vs. 12.88 ± 0.19 µg/L, p<0.0001). Analysis of integrated GH secretion (AUC) confirmed that the PWS group differed significantly from the control subjects (387.9 ± 76.1 µg/L/h vs. 1498.1 ± 56.2 µg/L/h, p<0.0001); the same result was obtained when the GH rise after arginine administration was expressed as nAUC (278.2 ± 53.3 µg/L/h vs. 1443.6 ± 52.5 µg/L/h, p<0.0001). PWS patients had an IGF-I SDS significantly lower than those found in control subjects (p<0.0001). Subnormal IGF-I values were present in 19 PWS individuals (82.6%) and two healthy controls (6.2%). These findings are in

agreement with the hypothesis that a complex derangement of hypothalamus-pituitary axis occurs in PWS.