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# No Differences in Serum Brain-Derived Neurotrophic Factor between Overweight/Obese and Normal Weight Adolescents with Polycystic Ovary Syndrome

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Context: Circulating brain-derived neurotrophic factor (BDNF) in adolescents with polycystic ovary syndrome (PCOS).
Objective: To evaluate potential differences in BDNF concentrations between overweight/obese adolescents and adolescents of normal weight with PCOS.
Methods: Serum levels of LH, E2, testosterone and BDNF were measured in each participant. Serum BDNF concentrations were measured using the R&D Systems Quantikine ELISA kit. The sensitivity was 20 pg/mL, the intra-assay precision ranged from 3.8% to 6.2% and the inter-assay sensitivity ranged from 7.6% to 11.3%. Spearman rho, Pearson correlation and Student's t-test were used for the statistical analysis.
Patients: Adolescents, 13-21 years old, with PCOS, who presented to the Centre for Adolescent Medicine and UNESCO Chair on Adolescent Health Care of the First Department of Pediatrics from January 2015 to May 2017, participated in the study. PCOS was diagnosed on the basis of at least two of the three Rotterdam ESHRE/ASRM PCOS Consensus Workshop Group (2004) diagnostic criteria. Exclusion criteria included other endocrinopathy or chronic disease, chronic medication or contraceptive use and pregnancy.
Intervention: Blood sampling was conducted between the 2nd and 5thday of spontaneous bleeding.
Main Outcome Measure: Differences in serum BDNF concentrations between overweight/obese adolescents and adolescents of normal weight with PCOS.
Results: A total of 28 adolescents with PCOS were included in the study; 15 overweight/obese (mean age ± SD, 15.3 ± 2.0 years; mean BMI ± SD, 29.5 ± 5 kg/m2) and 13 age-matched adolescents of normal weight (mean age ± SD, 16.0 ± 2.3 years; mean BMI ± SD, 21.2 ± 1.6 kg/m2). No statistically significant difference (p=0.352) was observed in serum BDNF concentrations between overweight/obese (17461.7 ± 8502.7 pg/mL) and normal weight (14651.1 ± 6968.6 pg/mL) adolescents with PCOS. Furthermore, no correlation was found between serum LH, E2, testosterone and BDNF concentrations (p=0.672, p=0.340 and p=0.435 respectively).
Conclusions: Results suggest that in adolescents with PCOS, the BDNF levels in serum are not affected by BMI. Given the small study sample, these findings need to be confirmed in a larger number of adolescent girls with PCOS.

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