

Session/Poster#

Presenter

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Endothelial Dysfunction is Associated with Adiponectin and Leptin in Adolescents with PCOS

Endothelial dysfunction (ED) was found to be prevalent in women with polycystic ovarian syndrome (PCOS) and was associated with increased leptin and decreased adiponectin levels but has not been studied in children. We performed a cross-sectional study of non-smoking adolescents aged 12-19 years old with PCOS by NIH-criteria (n=20) and controls (n=7) to study the differences in ghrelin, endothelin, anti-mullerian hormone (AMH), leptin, adiponectin and reactive-hyperemia index (RHI) a non-invasive single measure of ED using EndoPAT[®]. Between PCOS and control groups, there was no difference (mean-SD) in age (16.5-1.8 vs 17.1-2.3 years, p=0.31), BMI (35.7 -9.7 vs 30.9-10.3 kg/m², p=0.15) and A1C levels (5.45-0.4 vs 5.37-0.15%, p=0.22). Total and free testosterone was higher in PCOS group (60.7-21.8 vs 34.6-12.8 ng/dl, p=0.00063; 8.51 vs 3.76, p=0.0019, respectively). PCOS group had worse (lower) RHI (1.26-0.43 vs 1.72-0.40, p=0.015, normal RHI >1.67). PCOS group had higher leptin (1085.5-116.9 vs 896.4-176 pg/ml, p=0.014) and lower adiponectin (2.02-0.19 vs 2.27-0.13 $\hat{\text{A}}\mu\text{g/ml}$, p=0.001). There were no differences in endothelin-1 (10.9-1.2 vs 34.3-3.1 pg/ml, p=0.11), ghrelin (6060.1-13057.2 vs 5495.7-5474 pg/dl, p=0.44) and AMH levels (11.86-27 vs 3.8-10.1, p=0.14). HOMA-IR or insulin resistance was not significantly different between the PCOS and control groups (2.05 vs 3.48, p=0.26). Leptin is a proinflammatory product of adipose tissue and via its receptor on the endothelium, likely promotes platelet aggregation, thrombosis and stimulation of free radical production contributing to ED. Adiponectin on the other hand, is known to reduce levels of TNF $\hat{\text{I}}\pm$ and suppress its inflammatory effects on endothelial cells. Our adolescents with PCOS had lower RHI, higher leptin and lower adiponectin levels. These findings suggest increased risk of cardiovascular disease in adolescents which has not been previously reported in children before.