Hyperandrogenism doesn't increase the insulin resistance in overweight and obese adolescent girls with polycystic ovary syndrome

LITHUANIAN UNIVERSITY OF HEALTH SCIENCES

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Background

Polycystic ovary syndrome (PCOS) is associated with metabolic abnormalities and increased insulin resistance (IR), which is closely associated with abdominal obesity and hyperandrogenism in adults. Some studies indicate that hyperandrogenism influences insulin resistance development in PCOS patients. Data on PCOS association with risks of metabolic disorders in adolescence are scars.

Aim

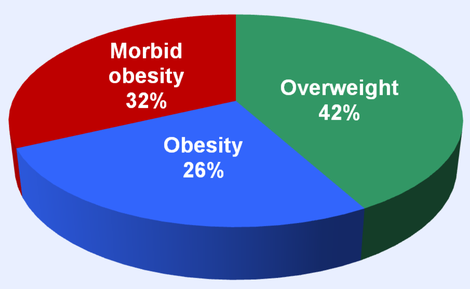
To investigate androgen profiles and its association with insulin resistance in overweight/obese adolescent girls.

Conclusions

Every 3rd OW/OB adolescent girl over 2 years post menarche has PCOS. OW/OB girls with PCOS were leaner and had lower waist circumference compared to girls without PCOS. OW/OB girls with PCOS were not more insulin resistant than girls without PCOS.

Methods

Study included 60 overweight (OW) (BMI >1.0 standard deviation score (SDS)) and obese (OB) (BMI >2.0 SDS) girls (mean age 15.4±1.3 years) at least 2 years post menarche. Mean BMI-SDS was 2.37±0.9 (58.7% were obese) (figure 1). BMI was evaluated according to International Obesity Task Force (IOTF) criteria for children. PCOS was diagnosed according to Rotterdam criteria.



Overweight – BMI-SDS 1.0-2.0
Obesity – BMI-SDS 2.0-3.0
Morbid obesity – BMI-SDS >3.0

Figure 1. Obesity level of study cohort

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Results

31.1% of OW/OB girls were diagnosed with PCOS.

BMI-SDS and waist circumference SDS in girls with PCOS were significantly lower compared to girls without PCOS (figure 2).

Testosterone (T), LH and FSH levels were significantly higher in girls with PCOS compared to those without PCOS (figure 3).

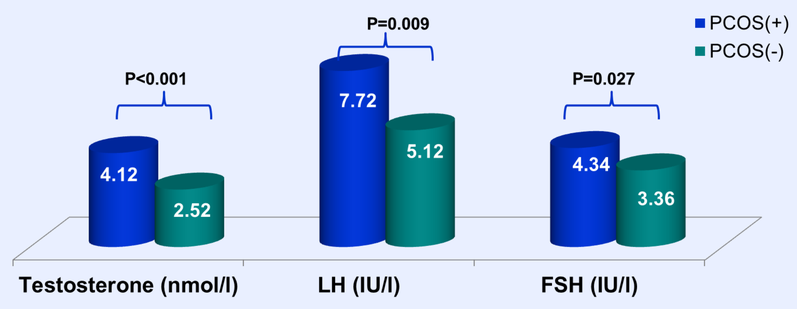
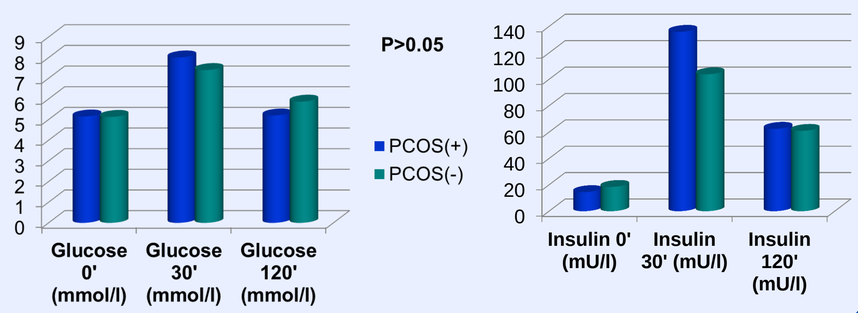


Figure 3. Testosterone, LH and FSH concentrations in girls with and without PCOS

Neither fasting insulin nor homeostasis assessment model index (HOMA-IR) were not significantly different in both groups (figures 5 and 6). In both groups combined, androgen levels were not associated with neither fasting insulin nor HOMA-IR.

Figure 5. Glucose and insulin levels during OGTT in girls with and without PCOS



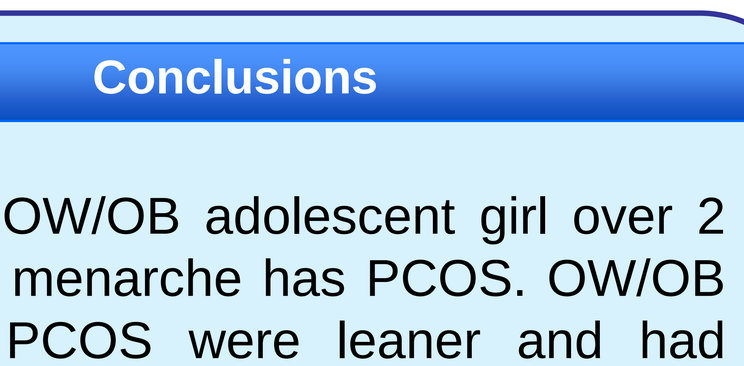


Figure 2. BMI-SDS and waist circumference SDS in girls with and without PCOS

DHEAS and free androgen index (FAI) were also significantly higher in girls with PCOS (figure4).

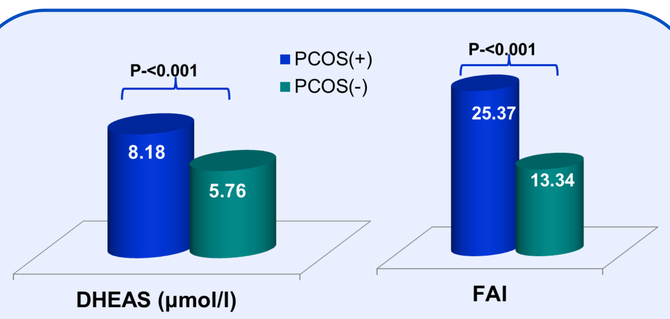


Figure 4. DHEAS and free androgen index (FAI) in girls with and without PCOS

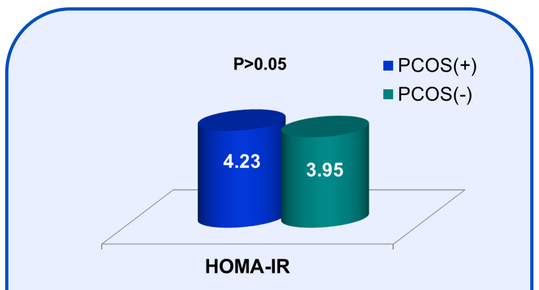


Figure 6. HOMA-IR in girls with and without PCOS

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