

## Classic phenotype of PCOS: does the ultrasound morphology of the ovary associate with the metabolic risk?

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**Context:** Polycystic ovary syndrome (PCOS) is the most common endocrine disorder of women in the reproductive age. The phenotypes according to the NIH criteria are four: phenotype Classic 3: hyperandrogenism (clinical and/or biochemical), oligoanovulation and PCO morphology (PCOM); phenotype Classic 2: hyperandrogenism and oligoanovulation, without PCOM; phenotype Ovulatory: hyperandrogenism and PCOM; and phenotype Normoandrogenic: oligoanovulation and PCOM. Metabolic risk varies across the different PCOS phenotypes, with the Classic PCOS phenotype showing the highest risk. Few studies compared the two Classic phenotypes and it is unclear if the presence of the ultrasound criteria (PCOM) introduces a different risk.

**Objective:** The aim of this study was to assess whether the presence of the polycystic ovary morphology may predict metabolic differences among women with the Classical phenotype.

**Methods and Patients:** a total of 182 consecutive Caucasian women with Classic PCOS phenotypes (either with or without PCOM), as diagnosed by the Rotterdam criteria, underwent accurate assessment of diagnostic and metabolic features. Insulin sensitivity was assessed by the Homeostatic Model Assessment (HOMA-IR). Free testosterone fraction was calculated by using the Vermeulen formula.

**Interventions:** None

**Main outcome measures:** HOMA-IR, lipid profile, anthropometric measurements

**Results:** BMI was  $32.4 \pm 9.8$  Kg/m<sup>2</sup> (mean  $\pm$  SD) in classic 2 group and  $28.9 \pm 7.5$  Kg/m<sup>2</sup> in classic 3 group ( $p=0.064$ ), whereas waist circumference was  $101 \pm 21$  cm in classic 2 group and  $92 \pm 17$  cm in classic 3 group ( $p=0.053$ ). Hirsutism score was  $14.2 \pm 7.8$  and  $8.9 \pm 6.3$ , respectively, in the two groups ( $p<0.001$ ). The two groups also differed in terms of AMH ( $5.2 \pm 3.0$  vs  $10.8 \pm 8.0$  ?g/L,  $p=0.011$ ) and androstenedione ( $11.3 \pm 4.9$  vs  $15.4 \pm 6.7$  nmol/L,  $p=0.014$ ). There were not differences between groups as regards insulin resistance, BMI, serum lipids and testosterone.

**Conclusions:** Subgroups of PCOS women belonging to the Classic phenotype, with or without PCOM, do not differ in terms of insulin resistance. However, they may have subtle differences as regards metabolic risk and endocrine characteristics, as suggested by differences in waist circumference and serum androstenedione levels.

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