

PCOS-Like Ovaries Linked to Obesity and Hyperinsulinemia

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BOSTON — Adolescent girls with polycystic ovary morphology have severe hyperinsulinemia after glucose stimulation, and the degree of insulin elevation is correlated with obesity, a study has shown. The findings emphasize the role of obesity and hyperinsulinemia in the pathophysiology of polycystic ovary syndrome, Dr. Marianna I. Bak said at the Fifth Annual World Congress on the Insulin Resistance Syndrome.

"Hyperinsulinemia directly influences the ovary function by potentialization of [luteinizing hormone] secretion and, as a consequence, may lead to increased ovarian androgen production," said Dr. Bak of the Medical University of Warsaw. It has been suggested that hyperinsulinemia and luteinizing hormone together could induce the changes that lead to polycystic ovary morphology, such as ovarian stroma and theca interna hyperplasia, and could contribute to menstrual dysfunction in adolescent girls, she said.

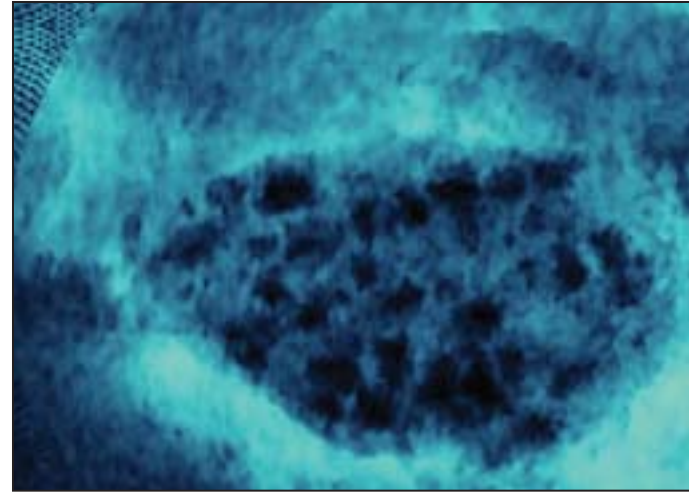
For this reason, Dr. Bak and colleagues hypothesized that identifying the subset of adolescent girls with polycystic ovary morphology could provide important information for the role of obesity and hyperinsulinemia in polycystic ovary syndrome (PCOS). Toward this end, the investigators evaluated the insulin resistance, glucose, and insulinogenic response to glucose stimulation in a sample of 13- to 18-year-old girls with clinical manifestations of irregular menstrual cycles and various degrees of polycysticlike ovary morphology on ultrasound, and they correlated circulating insulinemia with ovarian morphology and clinical features.

From a sample of 114 girls who met the study criteria, 36 with a body mass index (BMI) in the normal range (less than 25 kg/m²) and 42 with a BMI in the obese range (greater than 27) were included in the final analysis.

"In all of the studied ovaries, we observed small subcapsular follicles and increased stromal score," Dr. Bak reported. She noted, however, that the degree of advanced morphologic changes was differentiated based on BMI status. "In 50% of the obese girls, the stromal score was moderately increased [compared with the normal BMI group] and in 30% it was markedly increased," she said.

All of the girls had biochemical features of various degrees of hyperandrogenemia, and all had normal fasting glucose regardless of their BMI. Although fasting and stimulated insulinemia were increased in both groups, "insulin levels during [OGTT] were markedly higher in obese girls relative to normal BMI subjects," said Dr. Bak. In fact, "the obese girls had a threefold higher frequency of prediabetes based on oral glucose tolerance testing relative to normal-weight girls with similar ovarian changes." The latter finding suggests that the measure of insulin with the OGTT should be considered in all obese girls with irregular menstrual cy-

cles, even in the presence of normal fasting plasma glucose "in order to implement the proper early therapy against hyperinsulinemia," said Dr. Bak. Early intervention is important, she said, because the correlation between hyperinsulinemia and PCOS-like ovarian changes in this population suggests that hyperinsulinemia in adolescent girls could have a significant effect on their fertility. ■



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An ultrasound scan shows the multiple cysts (black masses, center) that are characteristic of polycystic ovary syndrome.

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