Polycystic ovarian syndrome (PCOS) is a gynecological condition for which the knowledge base is rapidly growing. PCOS is considered to be an endocrinological disorder characterized by menstrual irregularities, anovulatory infertility, obesity, hirsuitism, and acne. Several developments have led to agreement on definition, pathophysiology, treatment, and possible health consequences of PCOS.

The diagnostic criteria followed until 2003 was one that recommended by the National Institute of Health (NIH) in 1990. The criteria were clinical and/or biochemical evidence of hyperandrogenism, chronic anovulation, and exclusion of other disorders. At the Rotterdam Consensus-Workshop in 2003, it was agreed that after exclusion of other causes, 2 of the following 3 criteria are to be met for the diagnosis of the condition.
The three criteria are as follows:

1. Oligo- and/or anovulation,
2. Clinical and/or biochemical signs of hyperandrogenism,
3. Polycystic ovary morphology on ultrasound, i.e., detection of 12 or more follicles in one or both ovaries measuring 2–9 mm or an increased ovarian volume of >10 ml.

Some unresolved practical issues still remain with this definition. These include the quality of ultrasound scans, which can vary with the operator and machine, and the omission in diagnosis, criteria of the measures of insulin resistance which is increasingly being recognized as a central factor in the pathophysiology of PCOS.

On the basis of clinical, biochemical, and ultrasonogram features, 4–10% of women in the reproductive age are diagnosed to have polycystic ovaries. In population studies, on the basis of the ultrasonogram findings, 20–33% of apparently healthy women in the childbearing period have been found to have polycystic ovaries. South Asian women are more likely to suffer insulin resistance than others. They also have lower sex hormone–binding globulin levels.

The new developments in research into the pathophysiology of PCOS are the role of genetics, insulin resistance, and the interrelationships between obesity and ghrelin (a gastric peptide with adipogenic activation). Some of the family studies suggest a possible autosomal dominant phenotype, while others indicate that PCOS may be associated with a large deletion of chromosome 11 and X chromosome aneuploidies. Studies on candidate genes have focused on genes involved in steroid synthesis, carbohydrate metabolism, and gonadotrophin action and the major histocompatibility region. The strongest evidence has been found in support of an association with a marker (D 19S884 at 19 p 13.3) that is located 2 megabases centromeric from the insulin receptor. Increased insulin receptor serine phosphorylation has been observed in the skeletal muscles of 50% of women with PCOS.

Although it has been clearly established that insulin resistance is present in obese and non-obese women with PCOS, the exact mechanism of insulin resistance remains elusive. About 10–65% of women with PCOS are obese, and obesity in PCOS appears to be related to fat distribution around the abdomen (visceral fat).

Recent studies have revealed a complex interaction between obesity and reproductive function in the etiology of PCOS mediated by ghrelin. Ghrelin is a gastric peptide with orexigenic and...
adipogenic properties. Different studies reveal conflicting results. Ghrelin levels are found to increase after antiandrogen treatment in women with PCOS, thereby suggesting that androgens are independent modulators of ghrelin levels.

In recent times, the potential long-term health risks of PCOS have been a focus of research. Studies have clearly established that PCOS predisposes the patient to type 2 diabetes mellitus in later life. Another long-term risk is cardiovascular disease. In addition, hyperinsulinemia should be considered as a cluster syndrome, designated as metabolic syndrome X. Criteria for the diagnosis of this syndrome have been defined. The more number of the criteria is present, the higher is the level of insulin resistance and its downstream consequences. Other significant long-term consequences of the condition are the association with endometrial carcinoma, ovarian cancer, and breast carcinoma.

Because of long-term health risks, management of PCOS should not be symptom oriented alone. Since the identification of insulin resistance as the baseline reason for the problem, treatment is now aimed towards adopting measures to improve insulin resistance. This modality of treatment has been shown to allay gynecological concerns, as well as the long-term risks for diabetes mellitus and coronary artery disease. Lifestyle modification is the cornerstone in the management of women with PCOS. Adding insulin sensitizers, further improves the insulin resistance. Prevention of endometrial carcinoma is a core management goal for patients with PCOS. This is achieved by administering progesterone.

The clinical features of PCOS, such as infertility, acne, hirsuitism and obesity promote psychological morbidity. Women with PCOS face challenges to their feminine identity, which can lead to a loss of self esteem, anxiety, poor body image, and depression. Hence, assessment and treatment of mental health disorders should be included in the evaluation and management plan for women with PCOS.

References

1. Rotterdam ESHRE /ASRM sponsored PCOS Consensus Workshop Group


