Polycystic ovary syndrome (PCOS)

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Introduction
PCOS is a complex reproductive disorder in women. In 1930, it was first defined by Stein and Leventhal.

Clinically PCOS is the younger women's problem of irregular menstruation, amenorrhea or oligomenorrhea, sub-fertility, hirsutism and include potential long-term metabolic and cardiovascular consequences.

There are links between PCOS and endometrial carcinoma, obesity, cardiovascular disease and diabetes. So it is evaluated and treated by a team of specialists like Obstetricians and Gynecologists, Cardiologists, Medical endocrinologists, Reproductive endocrinologists, Dermatologists and Paediatricians. Because of increasing life expectancy, symptoms related to PCOS are now evaluated and treated both for short-term relief and for long term sequels.

The prevalence of PCOS cannot be determined with precision. Based on endocrine characteristics, prevalence of PCOS is 3% and based on Ultrasonic morphology, the prevalence is 22% and clinically it is 5%.

Clinical feature
Affected age group between 15-30 years. Patient with PCOS seeks health care for three major reasons:
1. Sub-fertility-mean incidence is 74%.
2. Menstrual irregularity-DUB-29%, Amenorrhea-51%
3. Androgen excess-Hirsutism-69%, Virilism-21%.

In 50% cases, slight HTN, obesity, and in late age patient comes with Type -II diabetes and in 50% cases bilateral enlarged ovaries are seen.

Pathophysiology
The fundamental defect of PCOS remains unknown. The endocrinologic effect of PCOS produce a vicious cycle of events as shown in the flow chart.

Metabolic abnormalities of pcos
1. Obesity- The cause of obesity in PCOS is unknown. Patients have slow metabolism results decrease use of energy. Weight loss is difficult with diet and exercise.
2. Increased Insulin Resistance- Here insulin receptors are normal and do not have genetic mutation. But defect is at post receptor level e.g. activation of glucose transporter and transport of glucose into the cell. There may be glucose intolerance and type II diabetes. The patients may exhibit greater rates of gestational diabetes.
3. Others- Patients have increased Blood pressure, Serum total cholesterol, increased LDH, TG but low HDL. They are more prone to produce cardiovascular diseases.
Diagnosis

1. Transvaginal Ultrasonography especially in obese patient.
2. Serum Hormone Level- ↑LH, LH: FSH is > 3:1, reverse E2:E1.
3. Abnormal serum lipid profile ↑TG, ↑Cholesterol, ↑LDH, ↑HDL.
4. Laparoscopy- Bilateral polycystic ovaries, capsule thick with pearly white.
5. Histology of ovarian tissue- there is thickening of Tunica albuginea. The follicles are at varying stages of maturation and theca cell hypertrophy.

Diagnostic criteria

54 experts of National Institute of Health from different parts of the World have agreed that no single of criteria could be endorsed for definite or probable diagnosis. Factors such as Insulin resistance, LH: FSH, polycystic ovary on Ultrasonography is considered to be possible criteria. Recently Ultrasonography and laparoscopy is considered to be the most diagnostic.

Treatment of PCOS

If fertility is not an immediate concern, then treatment goals fall into 2 broad categories -

First- is symptom management and secondly - assessment and amelioration of health risk, like CVD, DM.
1. Weight loss is important and will help in restoring the hormonal milieu to some extent.
2. Cigarette smoking raises DHEA and androsteredione level and should be avoided.
3. Estrogen suppresses androgen and adrenal production. It is best given with progesterone cyclically as oral contraceptives. Norgestrel containing pill should be avoided because of its high androgenicity. The desogestrel-containing pill is best suited.
4. Dexamethasone 0.5mg or prednisolone 5mg at bedtime also reduces androgen production.
5. Hirsutism is treated with cyproterone acetate or spironolactone.
6. Infertility is treated with clomiphene citrate. In 80% cases they ovulate and among them 40% conceive. However abortion rate is 25-40% is due to corpus luteal phase defect manifested by clomiphene. Hyper stimulation syndrome common in PCOS.

7. Surgery is reserved for those in whom - medical therapy fails or hyper stimulation occurs. Surgery comprises laparoscopic multiple punctures of the cysts with electrocautery or laser. Wedge resection is now avoided on account of postoperative ovarian adhesions and continued infertility.

8. Treatment of hyper insulinemia, Insulin resistance and glucose intolerance in PCOS-

a) Diet with exercise -there is no effective treatments that result in permanent weight loss. About 90% to 95% of obese patient who have a weight decrease later gave a relapse. Weight loss can improve the fundamental aspect of the:-

   (i) Endocrine syndrome of PCOS & result in lower circulatory androgen level.
   (ii) Decrease level of circulating insulin.
   (iii) Decrease level of unbound testosterone by increasing SHBG.

b) Drug
Summary and conclusions
A recommendation for the care of women with PCOS would include following:
3. Annual screening of all patient with PCOS for HTN.
4. Baseline screening for fasting lipid profile.
5. Screening of patient at rest for GTT.
6. Symptoms of cardiovascular disease should be regarded with a higher index of suspicion in the PCOS.

References