PREVALENCE OF POLYCYSTIC OVARS IN GYNECOLOGICAL POPULATION

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ABSTRACT
Objective: To determine the prevalence of polycystic ovaries in women of reproductive age by using ultrasound and to assess the biochemical indices in these women.
Setting: This study was carried out in Basrah Maternity and Children Hospital for the period between 1st of January to 30 of September 2008.
Study design: The prevalence of polycystic ovaries in gynaecological population of 617 women of reproductive age was determined by pelvic ultrasonography. The women included were any women attending the outpatient department and referred by gynaecologist to do an ultrasonic examination for any cause other than pregnancy. Ovarian volume was calculated in all women. Serum levels of luteinizing hormone (LH), follicle stimulating hormone (FSH), testosterone & prolactin were measured in 42 women (55%) in group A, 10 (34%) in group B & 50 women (8%) in group C.
Results: The ovarian ultrasonic appearance of 105 (17%) women met the morphological criteria of polycystic ovaries of which 88 women (14.3%) had bilateral polycystic ovaries and 17(2.7%) had unilateral polycystic ovaries; Of these women, 76(72.4%) has irregular cycles (group A) and 29(27.6) had normal cycles (group B). The remaining women with normal ovarian morphology constituted (group C).
Group A shows lower mean age & lower parity than group B & C. Mean ovarian volume was statistically higher in both group A(14.3±0.3ml) & B (12.8±1.7) than in group C (6.3±0.2ml & there is no significant difference in the number of peripheral cyst between group A&B. Mean LH/FSH, ratio, serum testosterone & serum prolactin values were statistically higher in group A only. Obesity is more common in group A.

INTRODUCTION

PolyCystic Ovary Syndrome (PCOS) is a clinical problem characterized by menstrual abnormalities, hirsutism, obesity and metabolic syndrome, resulting from abnormalities in the metabolism of androgens and oestrogen and in the control of androgen production. It was often associated with enlarged ovaries. However, it is known that PCOS may occur in women with normal sized ovaries and polycystic ovarian changes can be found in women with normal menstrual cycles.¹ Polycystic ovary syndrome is a common health problem that affects teenage girls and young women. It's cause is really not known some research has suggested that PCOS may be related to increased insulin production in the body-PCOS seems to run in families.²

Symptoms include:
• Oligomenorrhea or amenorrhea.²
• Heavy, irregular vaginal bleeding. About 30% of women with PCOS have this symptom.³
• Hair loss from the scalp and hair growth (hirsutism) on the face, chest, back, upper abdomen, thumbs, or toes. More than 70% of women with PCOS complain of these hair problems caused by high androgen levels.²
• Acne and oily skin, caused by high androgen levels.
• Symptoms of too much insulin (hyperinsulinemia) and insulin resistance, which can include upper body weight gain and skin changes, such as skin tags or dark, velvety skin patches under the arm, on the neck, or in the groin and genital area.⁴
• Depression or mood swings. Hormonal changes are a known cause of emotional symptoms.⁵
• Infertility this is because of anovulatory cycle.⁶
• Chronic pelvic pain.³

Standard diagnostic assessments:
1. History-taking specifically for menstrual pattern, obesity, hirsutism, and the presence of breast discharge. A clinical prediction rule found that these four questions can diagnose PCOS with a sensitivity of 77.1% and a specificity of 93.8%.²,³
2. Ultrasonography, specifically looking for small ovarian follicles. In PCOS, there is a so called “follicular arrest”, i.e., several follicles develop to a size of 5-7 mm, but not further.

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No single follicles reach the preovulatory size (16mm or more).\[3\]

3. Laparoscopic examination may reveal a thickened, smooth, pearl-white outer surface of the ovary.\[5\]

4. Hormonal assay: elevated serum levels of androgens including androstenedione and testosterone.\[5,6\]

The ratio of LH (Luteinizing hormone) to FSH (Follicle stimulating hormone) is greater than 1:1, as tested on Day 3 of the menstrual cycle.\[5,6\]

Treatment
Medical treatment of PCOS is tailored to the patient’s goals. Broadly, these may be considered under four categories:\[6\]

- Lowering of insulin levels
- Restoration of fertility
- Treatment of hirsutism or acne.
- Restoration of regular menstruation, and prevention of endometrial hyperplasia and endometrial cancer.

Insulin lowering
Dietary therapy
Where PCOS is associated with overweight or obesity, successful weight loss is probably the most effective method of restoring normal ovulation/menstruation, but many women find it very difficult to achieve and sustain significant weight loss. Low-carbohydrate diets and sustained regular exercise may help.\[2,6\]

Medications
Many women find insulin-lowering medications such as metformin hydrochloride (Glucophage), pioglitazone hydrochloride (Actos), and rosiglitazone maleate (Avandia) helpful, and ovulation may resume when they use these agents.\[7\]

Treatment of infertility
For overweight women with PCOS, who are anovulatory, diet adjustments and weight loss are associated with resumption of spontaneous ovulation. For those who after weight loss still are anovulatory or for anovulatory lean women, clomiphene citrate and FSH are the principal treatments used to help infertility. Previously, even metformin was recommended treatment for anovulation. But in the largest trial to date, comparing clomiphene with metformin, clomiphene alone was the most effective.\[8\] For patients who do not respond to clomiphene, diet and lifestyle modification, there are options available including assisted reproductive technology procedures such as controlled ovarian hyperstimulation with FSH injections and in vitro fertilization. Ovarian stimulation with FSH has an associated risk of ovarian hyperstimulation in women with PCOS- a dangerous condition with morbidity and rare mortality.\[9\] Though surgery is not commonly performed, the polycystic ovaries can be treated with a laparoscopic procedure called “ovarian drilling” (puncture of 4-10 small follicles with electrocautery), which often results in either resumption of spontaneous ovulations or ovulations after adjuvant treatment with clomiphene or FSH.\[10\]

Treatment of Hirsutism and acne
When appropriate (e.g. in women of child-bearing age who require contraception), a standard contraceptive pill may be effective in reducing hirsutism. A common choice of contraceptive pill is one that contains cyproterone acetate. Cyproterone acetate is a progestogen with anti-androgen effects that blocks the action of male hormones that are believed to contribute to acne and the growth of unwanted facial and body hair.\[11\] Other drugs with anti-androgen effects include flutamide and spironolactone, both of which can give some improvement in hirsutism. Metformin can reduce hirsutism, perhaps by reducing insulin resistance, and is often used if there are other features such as insulin resistance, diabetes or obesity that should also benefit from metformin.\[7\] Eflornithine is a drug which is applied to the skin in cream form (Vaniqa), and acts directly on the hair follicles to inhibit hair growth. It is usually applied to the face.\[8\]
contraceptive pill containing cyproterone acetate) is also beneficial for hirsutism, and is therefore often prescribed in PCOS. If a regular menstrual cycle is not desired, then therapy for an irregular cycle is not necessarily required. Most experts consider that if a menstrual bleed occurs at least every three months, then the endometrium is being shed sufficiently often to prevent an increased risk of endometrial abnormalities or cancer. If menstruation occurs less often or not at all, some form of progestogen replacement is recommended. Some women prefer a uterine progestogen implant such as the Mirena coil, which provides simultaneous contraception and endometrial protection for years, though often with unpredictable minor bleeding. An alternative is oral progestogen taken at intervals (e.g. every three months) to induce a predictable menstrual bleeding.

Aim of the Study: To determine the prevalence of polycystic ovaries in women of reproductive age by using ultrasound & to assess the biochemical indicts in such women.

MATERIALS AND METHODS
A prospective study done in ultrasonic department of Basrah Maternity and children Hospital for a period from 1st of January to 30th of September 2008. The women included in this study were any woman attending. The outpatient department & was referred by gynaecologist to do an ultrasonic examination for any cause other than pregnancy & she accept to do the examination and to be included in the study. A total number of 617 women were included in the study. Their age ranged from 18-40 years. After taking the history, all patients were referred for transabdominal ultrasound examination and their findings were reported. The following informations were obtained, name, age, parity, body weight, & height, level of education, occupation, details of menstrual history, fertility patterns, reason of attendance, if any biochemical test including serum FSH, LH, testosteron and prolactin have been done to them. The diagnosis of PCO is based on the presence of peripheral cyst of (10 or more) less than 10 mm in size in an enlarged ovary with significant increase in the central stroma. The women with polycystic ovaries (no.105) were considered as case group and they were further divided into two group. Group A-consists of women with PCO & irregular menstruation (no. 76), and group B-consists of women with PCO & regular menstruation (no. 29). The remaining women with normal ovarian morphology were considered as group C. Body mass index (BMI) was estimated for each woman (Weight in kilogram/height in square meter). BMI classification according to the National institute of Health guidelines as follows:

- Under weight BMI <19 Kg/m2.
- Normal weight BMI 19.0-24.9kg/m2.
- Over weight BMI 25-29.9 Kg/m2.
- Class 1 obesity BMI 30-34.9 Kg/m2.
- Class 2 obesity BMI >35 Kg/m2.

Biochemical investigations including S.testasteron, s. prolaction & LH/FSH Raito were performed in 42 women of group A, 10 women of group B & 50 women in group C. Statistical analysis done according to ANOVA test or Chi-square test as appropriate & P-value is considered significant at <0.05.

RESULTS
A total number of 617 women attending the ultrasound department in Basrah Maternity and Child Hospital have been examined by transabdominal ultrasound. The ovarian ultrasound appearance of 105 (17%) meet the morphological criteria of polycystic ovaries, of those women 17(2.7%) had unilateral PCO and 88(14.3%) had bilateral PCO.

Table-1, shows that mean age is significantly lower in group A than both group B & C. Also there is high percentage of nulliparity among group A while group B shows high percentage of women with parity 1-4. BMI was significant higher in group A.

BMI was significantly higher in group A only.
Table-2, Shows the ovarian morphology, it shows that the mean ovarian volume and total follicular number is significantly higher in both group A & B than group C.

Table 2. Ovarian ultrasound morphology.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ovarian volume (cm³)</td>
<td>14.3 ± 0.8</td>
<td>12.8 ± 1.7</td>
<td>6.3 ± 0.2</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Total follicular no.</td>
<td>13.5 ± 1.3</td>
<td>12.3 ± 1.2</td>
<td>1.9 ± 0.6</td>
<td>P&lt;0.001</td>
</tr>
</tbody>
</table>

Table-3, Study the biochemical tests including S.testosteron, S, prolactin & LH/FSH ratio for all groups, it shows that S.testosteron, S,prolactin & LH/FSH ratio were higher in group A only compared group B & C.

Table 3. Biochemical indices.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Testosterone Ng/ml (mean ± SD)</th>
<th>LH/FSH Ratio (mean ± SD)</th>
<th>Prolactin (mean ± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>1.3 ± 0.4</td>
<td>2.9 ± 1</td>
<td>20.5 ± 4</td>
</tr>
<tr>
<td>Group B</td>
<td>0.7 ± 0.2</td>
<td>1 ± 0.8</td>
<td>10.5 ± 3</td>
</tr>
<tr>
<td>Group C</td>
<td>0.6 ± 0.2</td>
<td>0.6 ± 0.4</td>
<td>8 ± 1</td>
</tr>
<tr>
<td>P-value</td>
<td>P&lt;0.05</td>
<td>P&lt;0.001</td>
<td>P&lt;0.001</td>
</tr>
</tbody>
</table>

DISCUSSION

The Syndrome is the most common endocrine disorders that affects approximately 17-22% of women in reproductive age. [13] Poly cystic Ovary Syndrome (PCOS), is one of the most common endocrine disorders that affects approximately 17-22% of women in reproductive age. [13]
frequent cause of anovulatory infertility. The Syndrome has an initial onset in peripubertal years and is progressive. Recent development in pelvic ultrasonography has enabled more detailed descriptions of enlarged cystic ovaries. PCO are characterized by peripheral cysts (10 or more) less than 10 mm in size in an enlarged ovary with significant increase in central struma. In this study it was found the that prevalence of PCO among gynecological population of 617 women attending an outpatient department of Basrah Maternity and Children Hospital & were referred to do an ultrasonic examination is 17%. This finding is similar to D Botosis et al., who found that the incidence of PCO in Areteion Hospital, Athens, Greece is 17%. In the study the current prevalence of unilateral PCO is 2.7% and bilateral PCO is 14.3%, this result is slightly lower than the result of another study done in Melbourne, Australia which found that the incidence of PCO is 23% of which 17% is bilateral and 6% is unilateral. The age distribution, the mean age for group A is significant less than those for group B & C. This is in agreement with other study which found PCOS has been indentified in much younger population. Also in this study there is higher incidence of nulliparity among group A compared to group C (48.6% compare to 23.3%) this is not surprising since, PCO is one of the main cause of anovulatory infertility. In this study women with PCO & irregular cycle i.e. group A had mean BMI which is higher than those with PCO and regular cycle (group B) & group C. This result is in agreement with the result of D Botosis, et al, which found that obesity is more common in women with PCO & irregular menses. Regarding the study of ovarian morphology, it was found that mean ovarian volume in both group A & B was higher than in the group C (14.3±0.8, 12.8±1.7, 6.3±0.2 respectively) this result is similar to study done by D Botosis, et al which also found that mean ovarian volume was higher in women with PCO in both regular and irregular cycle (13.4, 11.3 and 6.2 respectively). Regarding the biochemical indices, it was found that women with PCO and irregular menses had significantly higher levels of S.testosterone and LH/FSH ratio than both group B & C, this result is in agreement with D Botosis - et al which also found high level of testosterone in women with PCO and irregular menses (1.1 & 0.7 ng/ml). Also the mean LH/FSH is also higher in group A only (2.1 & 0.7 ng/ml). Regarding s.prolactin, it was found that women with PCO and irregular menses had s.prolactin which is higher than those with PCO and normal menstruation and the group C this may indicate that many of those women with PCO and irregular menstruation are cases of PCOS and it is well known that those women with PCOS have elevated s.test., LH/FSH ratio and s.prolactin.

Conclusions & Recommendations
The prevalence of polycystic ovaries in gynaecological population is 17%, of which 14.3% is bilateral & 2.7% is unilateral, Screening the ovaries in women of reproductive age and subsequent assessment of morphology in PCO can aid in the diagnosis of this condition in patients who may have a variable clinical presentation.

REFERENCE


