

Analysis of Patients with PCOS According to Demographic Factors & Hormonal Assay in Babylon Government in Iraq

Ban Aamer Mousa¹, Sijal Fadhil Farhood Makki Al Joborae²

¹Lecturer, Department of Gynecology and Obstetrics, ²Lecturer, Department of Community, College of Medicine, University of Babylon, Iraq

Abstract

Introduction: PCO is a significant alteration in hormonal state that happens in females which leads to ovulatory reasons of subfertility & amenorrhea in reproductive period. Polycystic Ovarian Syndrome was collecting of presenting symptoms and signs.

If we had two of the following presenting signs and symptoms, we called this condition as PCO.

1. Oligomenorrhea & amenorrhea (menstrual and ovulating problem).
2. Signs of hyperandrogenemia (clinical or biochemical).
3. U/S features of polycystic ovaries which include (thick stroma on the periphery of the ovaries, which include multiple small follicles > 10 and largest one < 9 mm, while the ovarian size > 10 cm³). Aims of the study :- analysis of Iraqi women in AL- Hilla city who present with problems in her menstrual cycle or fertility and assess their period of age when maximum symptoms and signs were appear, BMI, hereditary factors, occupation, residence, marital status and laboratory investigation to confirm our diagnosis (FSH, LH, AMH, PRLACTIN, TESTESTERONE) then vaginal u/s was done for married women and abdominal u/s done for unmarried one.

Patients and Method: Case controlled study carried out for women that suffer from problems in her menstrual cycle and fertility from outpatient clinic in Babylon teaching hospital and some private clinics, in period of 1 year from (June 2017 to June 2018).

100 complaining women were participated in this study randomly after verbal and written consent which taken from them.

Results: 100 women were shared in this study, we observed that percentage of infertility increase at the current time due to PCO for unknown reason, in addition to elevation percentage of PCOS frankly according to The Rotterdam criteria (symptoms and signs of presenting women), this multisystemic disorders disturb fertility to large extent because hormonal disturbances such as increase LH/FSH ratio, Prolactin & AMH also increase ovarian volume due to thick stromal layer of the ovary then we assess affecting factors and relieving factors, its relation to patients age, BMI, occupation, residence and her hereditary state and hormonal analysis to document the diagnosis.

Conclusions: Found a significant increase of infertility in couples especially in our country in relative to the past, previously the incidence of infertility is about 12% of total couples and the incidence of PCO in general female about 35% (married or unmarried, may be due to delay discovery especially in unmarried group) & 45% in married women decreasing with progress of age

Keywords: Sociodemographic characters, Antimullarian hormone AMH, infertility, menstrual disturbance, Polycystic ovary PCOS, risk factors.

Corresponding Author:

Ban Aamer Mousa

Lecturer, Department of Gynecology and Obstetrics,
College of Medicine, University of Babylon, Iraq
e-mail: ban200372@gmail.com

Introduction

Women present with irregular cycle, prolonged amenorrhea or oligomenorrhea, excessive hair growth on her face and body, scalp hair loss, acne, dark skin pattern

on body folds such as thighs & neck and history of gaining weight.⁽¹⁾

Incidence of infertility in the world about 12%, but in actually, mostly in Iraq, it has more incidence than that written in books for a lot of causes which need a lot of studies & researches to know the real problem and try to find their probable explanations⁽²⁻⁶⁾.

Various principles for diagnosis of Ovarian Syndrome, mostly have been recommended. The Rotterdam criteria which are highest largely used diagnostic criteria for PCOS

It has been agreed that female with Polycystic Ovary Syndrome had a possible connection with future health complications such as Metabolic disorders (such as diabetes mellitus), cardiovascular disorders & uterine hyperplasia, neoplasia and malignancy, insulin resistance, which was present in this disorder regardless of BMI, but exploited by obesity, mainly responsible for all these health complications⁽⁷⁾. It was newly documented a compromised cardiopulmonary functional capacity strictly related to insulin resistance in women with these diseases⁽⁸⁾. Hence, should be diagnosed as rapidly as possible to avoid and treat related disorders earlier if possible. Diagnosis of Polycystic Ovary Syndrome mainly depended on clinical features as a diagnostic method for this syndrome. Also the occurrence of Polycystic Ovary Syndrome differ from region to region⁽³⁾.

Causes of Polycystic Ovary Syndrome at this time is unknown, even though researchers reflect hereditary and ecological features had major causes for its presence. Main risk factor for it was having a family history of PCOS.

There is no cure for this syndrome but there are methods to improve symptoms. This involves lifestyle modifications like decreasing weight, well diet, taking adequate exercise, and leaving smoking if present. The

prevalence of Polycystic Ovary Syndrome differs with diagnostic principles. PCO on U/S were distinguished in up to 25%-30% from reproductive aged females^(4,6)

Anti-mullerian hormone, (AMH) was one of potential blood test for assessment of female fertility done at any time of the cycle, especially to detect ovarian reserve and there are other important tests currently used in the last decades for evaluation of the remaining ovarian ovaries supply which is antral follicles count⁽⁹⁾

Fertility professionals repeatedly use a combination of fertility investigations to best assess female's ovarian reserve, including transvaginal U/S to count the number of antral follicles & ovarian size and AMH levels.

Materials and Method

One hundred female (married and unmarried) were taken in this cross sectional study randomly. Their histories about important related symptoms such as (acne, amenorrhea and excessive hair growth) were recorded, their age between (21 - 44) years, for married patients, period of infertility (3 -20) years, their BMI (24-37)Kg/m², occupation (employer, housewife), Residence (urban, rural area), risk factors (obesity, hereditary factors) and others past medical disease (diabetes, hypertension, asthma, epilepsy). Then their hormonal analysis (FSH, LH, Prolactin, AMH) were done, also their ovarian size by U/S, at day 2-4 of the cycle.

Polycystic Ovary Syndrome: was irritating conditions for females, often challenging for treatment. PCOS is the most common endocrine defect in reproductive-age women.

Results

Figure 1 shows that the percentage of PCO in women which is diagnosed clinically (sign and symptom) represented 33.0%

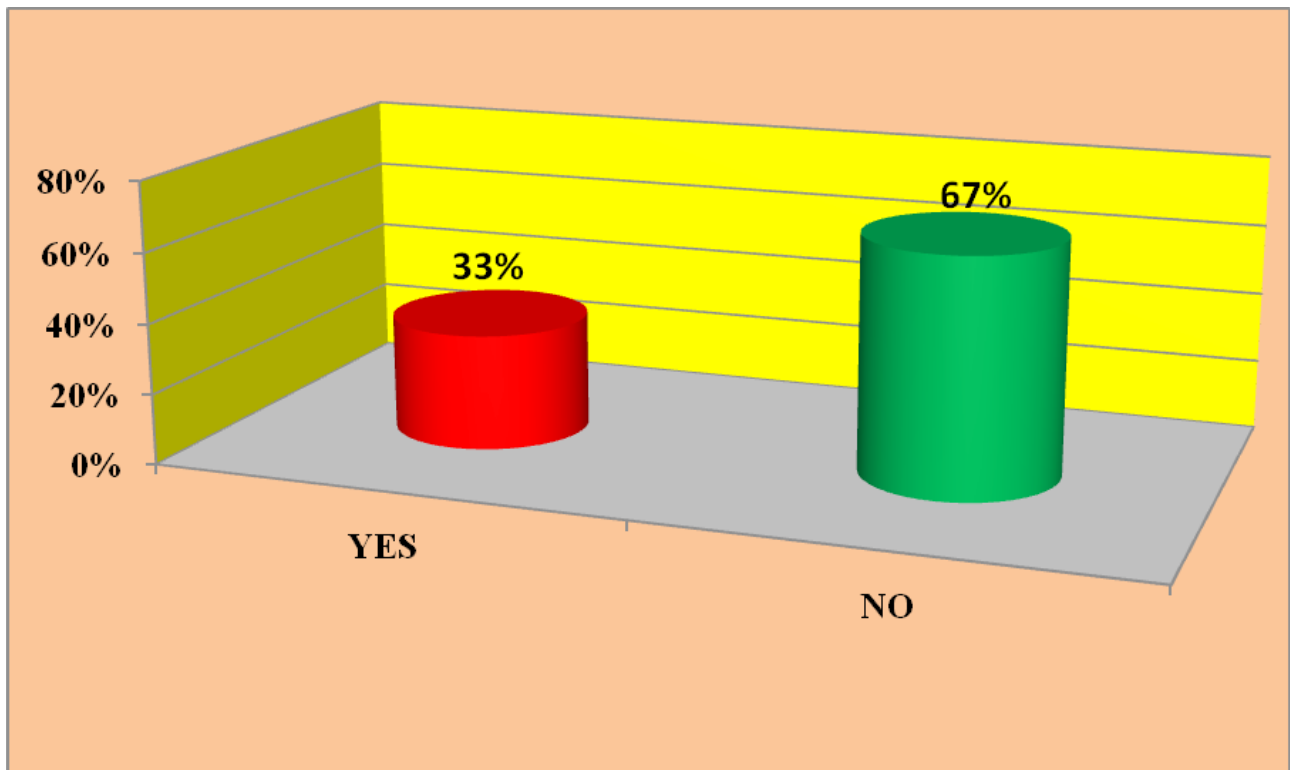


Figure 1: Distribution of the patients with polycystic ovary diagnosed by sign & symptom.

Table 1: Mean and standard deviation of variables of the women with PCO

Variable	Mean ± SD	Range
LH	12.19±4.55	(3.9-18)
FSH	5.97±1.8	(3.6-9.9)
LH/FSH ratio	2.07±0.77	(1.08-3.75)
AMH	6.62±2.17	(2.2-9.0)
Prolactin	33.97±10.36	(22.0-50.0)

Table 2 shows the associated symptoms that 100.0% of women with PCO had amenorrhea and 57.6% had hirsutism.

Table 2: Distribution of the sign and symptom of infertile women with PCO.

Variable	Number	Percentage (%)
Amenorrhea		
Present	33	100.0%
Absent	0	0.0%
Total	33	100.0%
Hirsutism		
Present	19	57.6%
Absent	14	42.4%
Total	33	100.0%

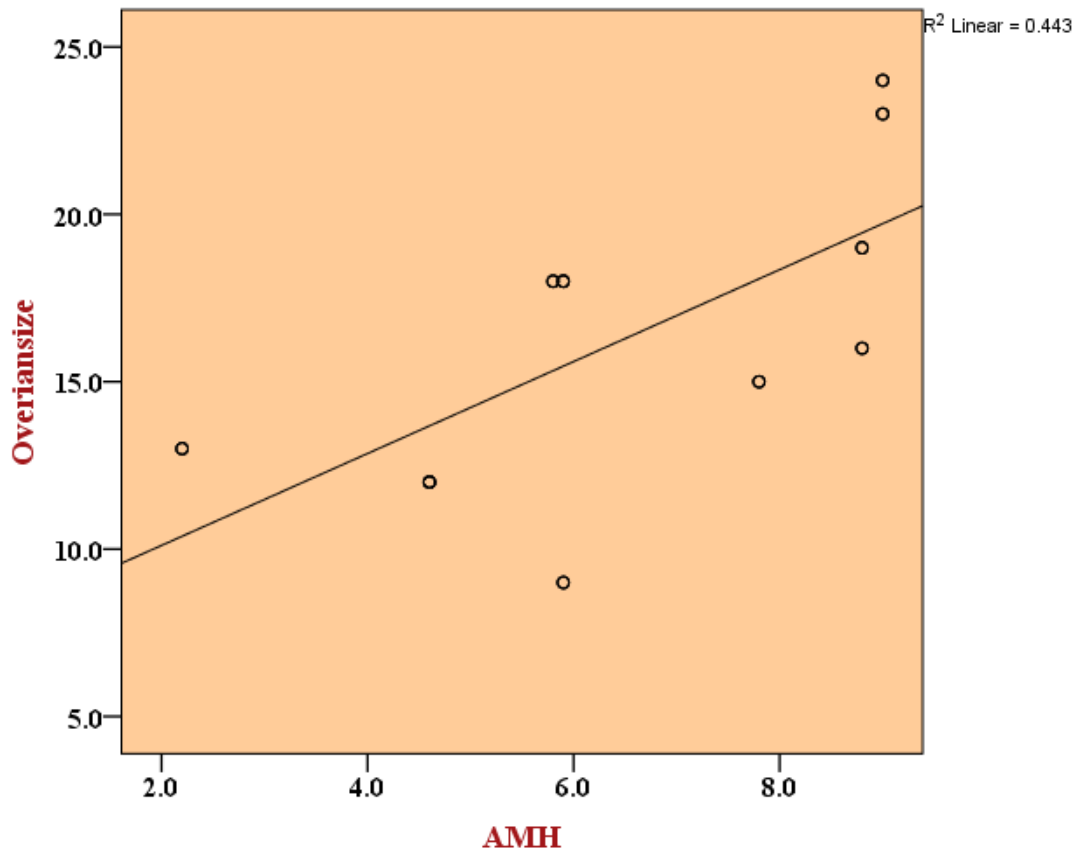


Figure 2: Correlation between AMH and ovarian size of the women with PCO. (positive correlation)

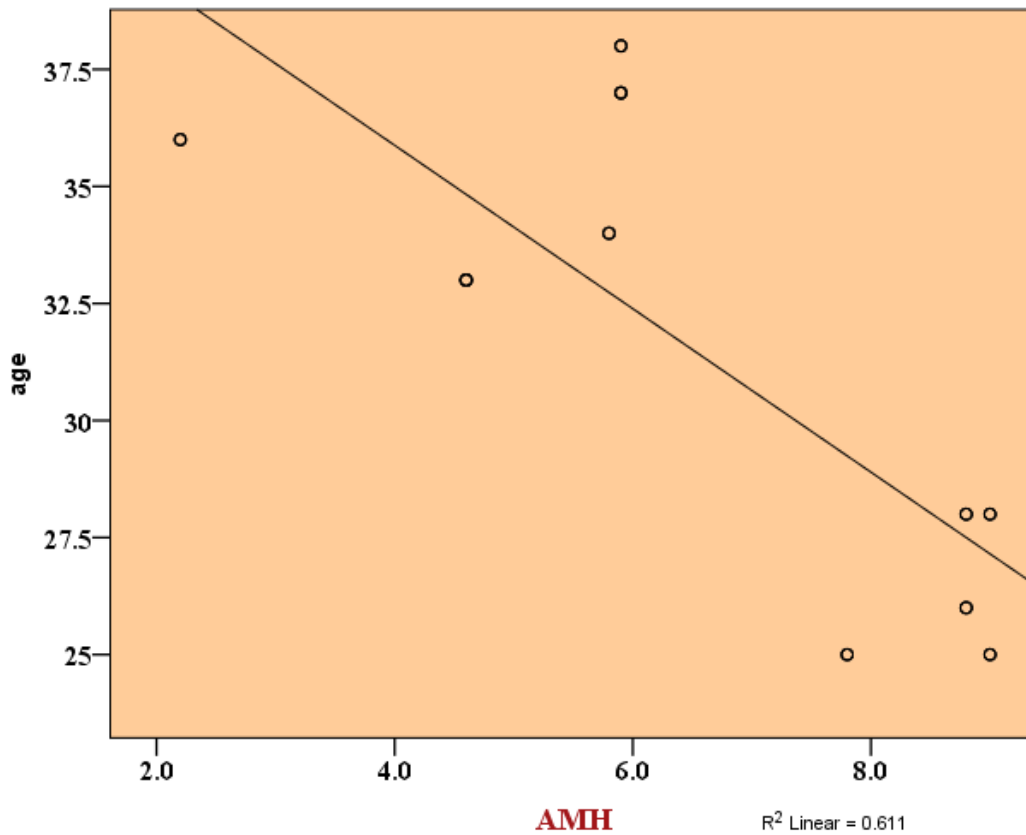


Figure 3: Correlation between AMH and age of the women with PCO. (reversed or negative correlation)

Table 3 shows that t test was conducted to show the mean difference of AMH, prolactin and LH/FSH ratio according to the presence of PCO in infertile women. It was significant mean differences in all circumstances (P value < 0.05)

Table 3: Mean difference of AMH, prolactin and LH/FSH ratio in PCO infertile women.

Study Variable	PCO	N	Mean ± SD	t-test	P –value
AMH	Yes	33	6.62±2.17	9.831	<0.001*
	No	67	2.46±1.54		
Prolactin	Yes	33	33.97±10.36	2.137	0.035*
	No	67	29.16±10.67		
LH/FSH ratio	Yes	33	2.07±0.77	8.979	<0.001*
	No	67	0.78±0.38		

*P value ≤ 0.05 was significant.

Discussion

Since women with PCOS are very sensitive to gonadotrophin stimulation, information of age related AMH is clinically important. Wisner et al, and found that the decline in level of AMH as the age progresses was linear and slower in PCOS when compared to normal women without PCOS (9).

Ovarian size correlates negatively with age . A percentile normogram will be useful to inform a woman about her ovarian reserve relative to her age group . The ovarian reserve decline rate relative to age group is important because of the declining fertility with increasing age (7).

The prevalence of PCOS is conventionally estimated at 4% to 8% of all reproductive age female, from studies performed in Spain, Greece and the USA (10-13). The prevalence of PCOS world has recently been shown to be 18% (17.8 ± 2.8%) in the first community-based prevalence study based on current Rotterdam diagnostic criteria (14), while in our study the prevalence of PCOS in Iraqi women in AL-Hilla city was estimated about 33%, which is higher than the percentage in the world .

PCOS has also been noted to affect 28% of unselected obese and 5% of lean women (15-18). Hopefully, lifestyle intervention including dietary, exercise and behavioral therapy, stop smoking if present and leave sedentary life as can as possible, improves the symptoms and signs of this syndrome(19).

Also, there is not significant correlation between occupation of the women and their residence .

There is dramatic increased in incidence of PCOS in our country than the world which lead to frightened condition in the present(irregular cycle and infertility) and in the future from its late complications such as metabolic disorders (diabetes mellitus), increased cholesterol level in the blood, heart problem and uterine complications which include typical endometrial hyperplasia,atypical endometrial hyperplasia and lastly may end with endometrium carcinoma .

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding

References

1. Diamanti-Kandarakis E, Kouli CR, Bergiele AT, Filandra FA, Tsianateli TC, Spina GG, Zapanti ED, Bartzis MI. A survey of the polycystic ovary syndrome in the Greek island of Lesbos: hormonal and metabolic profile. *J Clin Endocrinol Metab.* 1999;84:4006–4011. doi: 10.1210/jc.84.11.4006
2. Knochenhauer ES, Key TJ, Kahsar-Miller M, Waggoner W, Boots LR, Azziz R. Prevalence of the polycystic ovary syndrome in unselected black and white women of the southeastern United States: a prospective study. *J Clin Endocrinol Metab.* 1998;83:3078–3082. doi: 10.1210/jc.83.9.3078

3. Asuncion M, Calvo RM, San Millan JL, Sancho J, Avila S, Escobar-Morreale HF. A prospective study of the prevalence of the polycystic ovary syndrome in unselected Caucasian women from Spain. *J Clin Endocrinol Metab.* 2000;85:2434–2438. doi: 10.1210/jc.85.7.2434
4. Polson DW, Adams J, Wadsworth J, Franks S. Polycystic ovaries--a common finding in normal women. *Lancet* 1988; 1:870-872
5. Johnstone EB, Rosen MP, Neril R, Trevithick D, Sternfeld B, Murphy R, Addaun-Andersen C, McConnell D, Pera RR, Cedars MI. The polycystic ovary post-rotterdam: a common, age-dependent finding in ovulatory women without metabolic significance. *The Journal of clinical endocrinology and metabolism* 2010; 95:4965-4972
6. Clayton RN, Ogden V, Hodgkinson J, Worswick L, Rodin DA, Dyer S. How common are polycystic ovaries in normal women and what is their significance for the fertility of the population? [see comments]. *Clin Endocrinol* 1992; 37:127-134
7. Marcondes JAM, Hayashida SAY, Barcellos CRG, Rocha MP, Maciel GAR, Baracat EC. Metabolic syndrome in women with polycystic ovary syndrome: prevalence, characteristics and predictors. *Arquivos Brasileiros de Endocrinologia e Metabologia.* 2007;51(6):972–979.
8. Vigorito C, Giallauria F, Palomba S, et al. Beneficial effects of a three-month structured exercise training program on cardiopulmonary functional capacity in young women with polycystic ovary syndrome. *Journal of Clinical Endocrinology and Metabolism.* 2007;92(4):1379–1384
9. Wisner A, Shalom-Paz E, Hyman JH, Sokal-Arnon T, Bantan N, Holzer H, et al. Age-related normogram for AFC in women with PCOS. *Reprod Biomed Online.* 2013;27(4):414–18.
10. Azziz R, Woods KS, Reyna R, Key TJ, Knochenhauer ES, Yildiz BO. The prevalence and features of the polycystic ovary syndrome in an unselected population. *J Clin Endocrinol Metab.* 2004;89:2745–2749. doi: 10.1210/jc.2003-032046.
11. March WA, Moore VM, Willson KJ, Phillips DI, Norman RJ, Davies MJ. The prevalence of polycystic ovary syndrome in a community sample assessed under contrasting diagnostic criteria. *Hum Reprod.* 2010;25:544–551. doi: 10.1093/humrep/dep399.
12. Alvarez-Blasco F, Botella-Carretero JI, San Millan JL, Escobar-Morreale HF. Prevalence and characteristics of the polycystic ovary syndrome in overweight and obese women. *Arch Intern Med.* 2006;166:2081–2086. doi: 10.1001/archinte.166.19.2081.
13. Azziz R, Sanchez LA, Knochenhauer ES, Moran C, Lazenby J, Stephens KC, Taylor K, Boots LR. Androgen excess in women: experience with over 1000 consecutive patients. *J Clin Endocrinol Metab.* 2004;89:453–462. doi: 10.1210/jc.2003-031122.
14. Azziz R, Marin C, Hoq L, Badamgarav E, Song P. Health care-related economic burden of the polycystic ovary syndrome during the reproductive life span. *J Clin Endocrinol Metab.* 2005;90:4650–4658. doi: 10.1210/jc.2005-0628.
15. Clark AM, Thornley B, Tomlinson L, Galletley C, Norman RJ. Weight loss in obese infertile women results in improvement in reproductive outcome for all forms of fertility treatment. *Hum Reprod.* 1998;13:1502–1505. doi: 10.1093/humrep/13.6.1502.
16. Yoo RY, Sirlin CB, Gottschalk M, Chang RJ. Ovarian imaging by magnetic resonance in obese adolescent girls with PCOS: a pilot study. *Fertil Steril.* 2005;84(4):985–95.
17. Agarwal A, Verma A, Agarwal S, Shukla RC, Jain M, Srivastava A. AFC in normal (fertility-proven) and infertile Indian women. *Indian J Radiol Imaging.* 2014;24(3):297–302.
18. Almog B, Shehata MB, Shalom-Paz E, Tan SL, Tulandi T. Age related normogram for AFC: McGill reference guide. *Fertil Steril.* 2011;95(2):663–66.
19. Ferraretti AP, Lappi M, Magli MC, Muzzonigro F, Resta S, Gianaroli L. Factors affecting thawed oocyte viability suggest a customized policy of embryo transfer. *Fertil Steril.* 2010;94(4):1308–13.