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The Prevalence of Polycystic Ovary Syndrome in Women with Compromised Fertility in Tirana

Mimoza Dollenga[1], Emirvina Kolici[2]

[1]Clinic of Specialties nr 9 in Tirana
dr.mimoza.dollenga[at]gmail.com

[2]Department of Laboratory Faculty of Medicines, University of Medicine Tirana
e.kolici[at]yahoo.com

Abstract: ***Polycystic ovary syndrome (PCOS) is a complex and heterogeneous disease that involves menstrual dysfunction and compromised fertility, as well as metabolic disorders. The widely accepted consensus is 2003 Rotterdam ESHRE/ASM in which two outthree criteria must befor diagnosis of PCO: hyperandrogenism, oligo/anovulation, polycystic ovary morphology on ultrasound. PCOS is the most common endocrine disorder in women, with an overall prevalence of 5% to 20%, and a frequent cause of infertility (1, 2). There are very few data available on the prevalence of PCOS in Albania. The aim of our study was to evaluate the prevalence of PCOS in infertile women according Rotterdam criteria presented in a gynecologic clinic in Tirana from Januar2014 - December 2019 (n=544). The mean age of study population was 30±8 years. In our study 43 women were excluded, 155 (30.9%) had regular menstrual cycle and no sign of hirsutism or acne, 346 (69.1%) had one or more Rotterdam criteria, 226 fulfill the Rotterdam criteria with following phenotypes: 177 (78.3%) OA+ PCOM (group D), 38 (16.8%) HA+ PCOM (group C), 11 (4.9%) HA+OA+ PCOM (group A). The prevalence of PCOS according to Rotterdam criteria was 41.5% (226/544) among the women with infertility and the predominant phenotype was the phenotype D following by phenotype C. The prevalence of PCOS is higher and the phenotype different in women with problem of infertility in relation with general population. The criteria of Rotterdam 2003 and the NIH phenotypes can describe better each population.***

Keywords: PCOS, infertility, phenotype

1. Introduction

Polycystic ovary syndrome (PCOS) is a complex and heterogeneous disease that involves menstrual dysfunction and compromised fertility, as well as metabolic disorders.

Since 1990 there were different consensus for the criteria of diagnosis of PCOS but the main and widely accepted consensus is reached in 2003 in Rotterdam by the European Society of Human Reproduction and Embryology and the American Society for Reproductive Medicine, and these are the most broadly used criteria (1) requiring two out of the following three criteria: clinical and/or biochemical hyperandrogenism (HA), oligo - or anovulation, and polycystic ovary morphology (PCOM) on ultrasound (2).

In 2006 the AE - PCOS Society have proposed for the diagnosis of PCOS two of two following criteria are required: 1) HA and 2) OA, PCOM or both. In 2012 the NIH Consensus recommended the use of 2003 Rotterdam criteria according four phenotypes A, B, C, D (table 1) (12)

	1990 NIH	2003 ESHRE/ASRM (Rotterdam)	2006 AE-PCOS Society	2012 NIH Consensus[4]
Criteria	2 of 2 criteria required: 1. HA 2. OA	2 of 3 criteria required: 1. HA 2. OA 3. PCOM*	2 of 2 criteria required: 1. HA 2. Ovarian dysfunction (OA, PCOM, or both*)	Recommended use of the 2003 Rotterdam criteria, but with the specification that the specific phenotypes included be identified: • Phenotype A: HA+OA+PCOM* • Phenotype B: HA+OA • Phenotype C: HA+PCOM* • Phenotype D: OA+PCOM*
Exclusions	Exclusion of similar or mimicking disorders			

The other androgen excess disorders should be excluded such as non - classical congenital adrenal hyperplasia (NC - CAH), Cushing's syndrome, androgen - secreting tumors, hyperprolactinemia, thyroid diseases, drug - induced androgen excess, as well as other causes of oligomenorrhea or an ovulation (5)

A large number of studies accept that Polycystic Ovary Syndrome (PCOS) is the most common cause of chorionic an ovulation and anovulatory infertility; (3, 4) and a common endocrinopathy in women who are at reproductive age and it is associated with metabolic disorder and reproductive dysfunction (3, 5, 6). There are different percentage from several studies that goes from 5% - 10% (7,

8), to 6.6% - 8% (9, 10) and even reported up to 6% - 10% of women in reproductive age (11). These discrepancies are due to different criteria and population used in their studies.

In Albania we have very few date about the PCOS in women at reproductive age and we decided to evaluate the prevalence of PCOS according to 2003 Rotterdam criteria and NIH 2012 consensus in a group of women presented in the gynecologic and infertility clinic.

Aim of study

To evaluate in women with infertility the prevalence of PCOS according the 2003 Rotterdam Criteria and to determine the contribution of every criteria: HA, OA, PCMO according NIH 2012 (including four phenotype of PCOS - A, B, C, D).

2. Materials and Methods

The study was conducted in a gynecological and infertile clinic in Tirana from January 2014 - December 2019 with women that were presented spontaneously in this clinic concerning problems with impaired infertility. In our study we included 544 dossier of women from 25 - 45 years old with clinical, ultrasound and biochemical hormonal examinations. We excluded the dossier of women with other endocrine disorder that cause cycle disorders or HA or have taken pharmacological treatment that affects the menstrual cycle or biochemical profile.

The ultrasonography that consists, on transvaginal ultrasound examination was operated by a gynecologist who ran the clinics and diagnosed PCOS cases. The PCOM with 12 or more follicles measuring 2 to 9 mm in diameter or increased ovarian volume, over 10 cm3 was consider as PCOS. Hirsutism was assessed through the modified Ferryman - Gallwey (mFG) score. The presence of acne was detected through visual assessment. The Total testosterone, FSH, LH, DEAH - S were measured by technic of ELISA or ECLIA. HA criteria is determined by the presence of hirsutism, acne, and abnormal hormonal test. Oligo - Anovulation (OA) criteria was determined as menstrual cycles greater than 35 - day intervals or 8 cycles or less per year.

3. Results

The mean age of women in our study was 30±8 years. In 544 dossier examinate 43 were excluded (32 with hypothyroidism and 11 hyperprolactinemia), 155 (30.9%) women had regular menstrual cycle and no sign of hirsutism or acne.346 (69.1%) had one or more Rotterdam criteria PCOM, or oligo – an ovulation, or Hirsutism.226 fulfill the Rotterdam criteria and presented respectively the following phenotypes: 177 (78.3%) OA+ PCOM (group D), 38 (16.8%) HA+ PCOM (group C), 11 (4.9%) HA+OA+ PCOM (group A). We have no cases with type B HA + OA.

The prevalence of PCOS according to Rotterdam criteria was (41.5%) (226/544) among the women with infertility and the predominant phenotype was the phenotype D following by phenotype C. (tab.2)

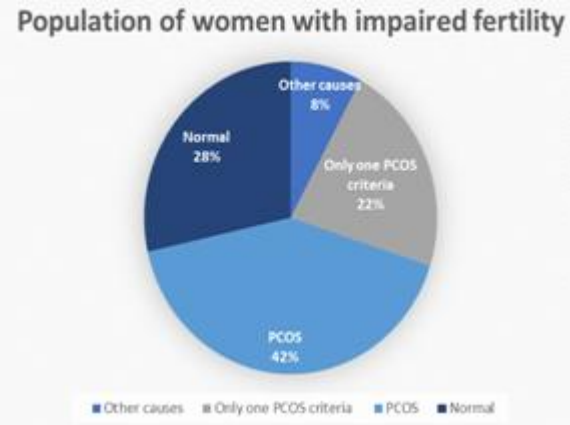

Table 2: Distribution (%) of PCOS in infertile women according to phenotypes

	n	%
Phenotype A (HA+OA+PCOM)	11	4.9
Phenotype B (HA+OA)	0	0
Phenotype C (HA+PCOM)	38	16.8
Phenotype D (OA+PCOM)	177	78.3
Total	226	100

4. Discussion

The prevalence of PCOS is widely studied in different countries and the results are different according tothe countries, geographical position or race. There are also different results in the prevalence of PCOS if they were calculated in general population or in women with infertility.

In our studies we used the 2003 Rotterdam and NIH 2012 phenotypes criteria for the diagnostic of PCOS in women with infertility. The prevalence of PCOS was 41.5% and this is higher than the prevalence reported in other studies during the reproductive age, with a global prevalence of 5–20% [13, 14) Our result with a higher prevalence in infertile women population is reported from other author too (15). Several published studies recently documented the distribution of PCOS phenotypes using Rotterdam criteria (16, 17).

In our study the group D with oligo/amenorrhea and PCOM was predominant (78 %) in infertile women but we have also a number of case with HA and PCOM phenotype C (16 %) and the phenotype A 11 % with OA+HA+PCOM. Our results are concordant with a study in infertile women in Sudanwhere D phenotype was the most prevalent (52%) followed by phenotype B (22.6%), phenotype C (18.2%), and phenotype A (7.6%) and in aligned with the study from China and Iran [14] that reported phenotype D as the most prevalent.

Published data indicate thatPCOS phenotypes identifiedin general population versus the clinical settings demonstrate different phenotypes (18, 19). The prevalence of PCOS according to the diagnostic criteria of the NIH, Rotterdam and AE - PCOS were 13.6, 19.4, and 17.8, respectively. those who met the Rotterdam criteria, 23.9, 46.3, 21.6, and 8.2% had phenotypes A, B, C, and D, respectively. (20)

Overall, it seems that the classic form of PCOS (i. e., phenotypes A and B) constitutes approximately two - thirds of the total of PCOS patients identified within the clinical settings (21). Unfortunately, insufficient data exist regarding the distribution of phenotypes in women with PCOS identified in medically unbiased (i. e., unselected) populations, which would more accurately reflect the distribution of phenotypes in PCOS in the "natural" state.

5. Conclusion

The prevalence of PCOS is higher in women with problem of infertility in relation with general population and the phenotype of PCOS can be different in infertile women. We think that the criteria of Rotterdam 2003 and the NIH 2012 phenotypes can describe better the problems in each population.

The authors do not have conflict of interest.

References

[1] Ntumy M, Maya E, Lizneva D, Adanu R, Azziz R. The pressing need for standardization in epidemiologic studies of PCOS across the globe. Gynecol Endocrinol.2019; 35: 1–3

[2] Zehravi M, Maqbool M, Ara I. Polycystic ovary syndrome and infertility: an update. Int J Adolesc Med Health.2021 Jul 22; 34 (2): 1 - 9. doi: 10.1515/ijamh - 2021 - 0073. PMID: 34293835.

[3] Wood JR, Dumesic DA, Abbott DH, Strauss JF 3rd. Molecular abnormalities in oocytes from women with polycystic ovary syndrome revealed by microarray analysis. J Clin Endocrinol Metab.2007 Feb; 92 (2): 705 - 13. doi: 10.1210/jc.2006 - 2123. Epub 2006 Dec 5. PMID: 17148555.

[4] Dumont A, Robin G, Catteau - Jonard S, Dewailly D. Role of Anti - Müllerian Hormone in pathophysiology, diagnosis and treatment of Polycystic Ovary Syndrome: a review. Reprod Biol Endocrinol.2015 Dec 21; 13: 137. doi: 10.1186/s12958 - 015 - 0134 - 9. PMID: 26691645; PMCID: PMC4687350.

[5] Spritzer PM, Ramos RB, MarchesanLB, de Oliveira M, Carmina E. Metabolic profile of women with PCOS in Brazil: a systematic review and meta - analysis. DiabetolMetabSyndr.2021 Feb 16; 13 (1): 18. doi: 10.1186/s13098 - 021 - 00636 - 5. PMID: 33593439; PMCID: PMC7885437.

[6] Agapova SE, Cameo T, Sopher AB, Oberfield SE. Diagnosis and challenges of polycystic ovary syndrome in adolescence. Semin Reprod Med.2014 May; 32 (3): 194 - 201. doi: 10.1055/s - 0034 - 1371091. Epub 2014 Apr 8. PMID: 24715514; PMCID: PMC4426828.

[7] Shrikhande L, Shrikhande B, Shrikhande A. AMH and Its Clinical Implications. J ObstetGynaecol India.2020 Oct; 70 (5): 337 - 341. doi: 10.1007/s13224 - 020 - 01362 - 0. Epub 2020 Aug 19. PMID: 33041549; PMCID: PMC7515982.

[8] Azziz R. PCOS: a diagnostic challenge. Reprod Biomed Online.2004 Jun; 8 (6): 644 - 8. doi: 10.1016/s1472 - 6483 (10) 61644 - 6. PMID: 15169578.

[9] Shi M, Huang W, Shu L, Hou G, Guan Y, Song G. Research on polycystic ovary syndrome: a bibliometric analysis from 2009 to 2019. Gynecol Endocrinol.2021 Feb; 37 (2): 121 - 125. doi: 10.1080/09513590.2020.1807501. Epub 2020 Aug 19. PMID: 32812809.

[10] Wu Q, Gao J, Bai D, Yang Z, Liao Q. The prevalence of polycystic ovarian syndrome in Chinese women: a meta - analysis. Ann Palliat Med.2021 Jan; 10 (1): 74 - 87. doi: 10.21037/apm - 20 - 1893. PMID: 33545750.

[11] Rackow BW. Polycystic ovary syndrome in adolescents. CurrOpinObstet Gynecol.2012 Oct; 24 (5): 281 - 7. doi: 10.1097/GCO.0b013e32835669ff. PMID: 22781076.

[12] Kauffman RP, Baker TE, Baker VM, DiMarino P, Castracane VD. Endocrine and metabolic differences among phenotypic expressions of polycystic ovary syndrome according to the 2003 Rotterdam consensus criteria. Am J Obstet Gynecol.2008 Jun; 198 (6): 670. e1 - 7; discussion 670. e7 - 10. doi: 10.1016/j. ajog.2008.01.037. Epub 2008 Mar 20. PMID: 18355776.

[13] Ntumy M, Maya E, Lizneva D, Adanu R, Azziz R. The pressing need for standardization in epidemiologic studies of PCOS across the globe. Gynecol Endocrinol.2019; 35: 1–3 or in women with infertility when the prevalence is higher.

[14] Bozdag G, Mumusoglu S, Zengin D, Karabulut E, Yildiz BO. The prevalence and phenotypic features of polycystic ovary syndrome: a systematic review and meta - analysis. Hum Reprod.2016; 31: 2841–55.).

[15] Elasam et al. The prevalence and phenotypic manifestations of polycystic ovary syndrome (PCOS) among infertile Sudanese women: a cross - sectional study BMC Women's Health (2022) 22: 165

[16] Li R, Zhang Q, Yang D, Li S, Lu S, Wu X, et al. Prevalence of polycystic ovary syndrome in women in China: a large community - based study. Hum Reprod.2013; 28: 2562–9.32.

[17] Moran C, Tena G, Moran S, Ruiz P, Reyna R, Duque X. Prevalence of polycystic ovary syndrome and related disorders in mexican women. GynecolObstet Invest.2010; 69: 274–80.

[18] Lizneva D, Kirubakaran R, Mykhalchenko K, Suturina L, Chernukha G, Diamond MP, et al. Phenotypes and body mass in women with polycystic ovary syndrome identified in referral versus unselected populations: systematic review and meta - analysis. FertilSteril.2016; 106: 1510 - 1520.

[19] Mumusoglu S, Yildiz BO. Polycystic ovary syndrome phenotypes and prevalence: differential impact of diagnostic criteria and clinical versus unselected population. CurrOpin Endocrine Metab Res.2020; 12: 66–7

[20] Mahbanoo Farhadi - Azar et al. The Prevalence of Polycystic Ovary Syndrome, Its Phenotypes and Cardio - Metabolic Features in a Community Sample of Iranian Population: Tehran Lipid and Glucose Study, Endocrinol., 01 March 2022

[21] Wild RA, Carmina E, Diamanti - Kandarakis E, Dokras A, Escobar - Morreale HF, Futterweit W, et al. Assessment of cardiovascular risk and prevention of cardiovascular disease in women with the polycystic

ovary syndrome: a consensus statement by the androgen excess and polycystic ovary syndrome (AE - PCOS) society. J Clin Endocrinol Metab.2010; 2038–49.

[22] Yang R, Li Q, Zhou Z, Qian W, Zhang J, Wu Z, Jin L, Wu X, Zhang C, Zheng B, Tan J, Hao G, Li S, Tian T, Hao Y, Zheng D, Wang Y, Norman RJ, Li R, Liu P, Qiao J. Changes in the prevalence of polycystic ovary syndrome in China over the past decade. Lancet Reg Health West Pac.2022 May 31; 25: 100494.