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Intensity of Premenstrual Syndrome Among Different Phenotype of Polycystic Ovarian Syndrome

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Abstract

Premenstrual syndrome is cluster of symptoms that includes physical (lower abdominal cramp, breast tenderness, swelling in the ankle, fatigue, etc.), psychological (stress, anxiety, depression, etc.), and behavioural (social withdrawal, mood swings, sleeplessness, irritability, anger, etc.) signs before onset of bleeding during menses. The intensity of premenstrual syndrome could vary among different phenotypes including A, B, C, D of polycystic ovarian syndrome that is the culmination of triad – Hyperandrogenism, Irregular Menses, and polycystic ovarian morphology. Aim of the study is to provide a database on the intensity of premenstrual syndrome among different phenotypes of PCOS. Total 147 samples were selected from the Institute of Medical Sciences, Banaras Hindu University by using the Rotterdam criteria (2003). The intensity of PMS was assessed by using the PMS scale. Among 147 samples, 45 belonged from phenotype A, 21 from B, 32 from C, and 49 from D. Mean score of body mass index were 67.28±4.2 in phenotype B, 67.32±4.5 in phenotype D which was high as compared to other phenotypes. 33.3 % of subjects reported moderate symptoms (2.17±.777) and 55.1 % of subjects reported mild symptoms (2.02±.721) from phenotype D. overall symptoms of PMS varied from one phenotype to another. Various metabolic abnormalities may trigger the intensity of PMS therefore different kinds of management could be used to minimize the symptoms or baseline treatment.

KeyWords-AnthropometricParameters,Premenstrual,IrregularMenses,Hyperandrogenism

Introduction

Premenstrual syndrome is characterized by physical, behavioural, and psychological symptoms during luteal phase before the onset of bleeding among women of reproductive age.[1] Physical symptom include bloating, headache, tiredness, fatigue, breast pain, etc. behavioural symptoms include social withdrawal, irritation, mood swing, anger, etc. whether psychological symptoms include anxiety, stress, depression, etc. the causative factor associated with PMS still remain unknown.[1,2] Some literature highlights its association with hormonal imbalance.[3] Polycystic ovarian syndrome is also associated with hormonal imbalance, it is a culmination of triad i.e., ovulatory dysfunction, androgen excess, and polycystic ovary.[4] Symptoms associated with PMS may vary among different phenotypes of PCOD (A, B, C, D) science there is not enough data associated with PMS among different phenotypes of PCOD. The aim of the study is to provide a database on intensity of premenstrual syndrome among all phenotypes of polycystic ovarian syndrome.

Materials and Method

The study was conducted at Institute of Medical Sciences, department of obstetrics and gynaecology, OPD 105, from October 2019 - May 2020. The study was approved by institute ethics committee, IMS, BHU. Oral and written consent was provided to participants. Total 147 respondents were selected by using open epi version -3 suffering from PCOS. Rotterdam criteria were used for the screening of subjects. According to this criterion, 2 factors should be present among these three factors i.e., oligo/ anovulation, polycystic ovaries, and hyperandrogenism. PMS scale based on 40 items was used to assess the intensity of premenstrual syndrome.[5] Screening of PMS was prospectively completed for 2 cycles. Subjects with Adrenal hyperplasia and thyroid were excluded. SPSS (Statistical packages for social science) version 26.0 was used for statistical analysis.

Results and Discussion

Table no 1 shows the phenotypic classification. Among 147 women, 45 (30.6%) belong to phenotype A category which includes ovulatory dysfunction, hyperandrogenism, and polycystic ovary, 21 (14.2%), 32(21.7%), 49 (33.3%) belonged to Phenotype B, C, D respectively.

Phenotypes	Characteristics	Frequency	Percentage
A	HA+OD+PCOM	45	30.6
B	HA+OD	21	14.2
C	HA+PCOM	32	21.7
D	OD+PCOM	49	33.3
Total		147	100

HA = Hyperandrogenism, **OD** = Ovulatory Dysfunction, **PCOM** = Polycystic Ovary Morphology

Table No-1:Phenotypic classifications of subjects suffering from PCOS

Sachdeva et.al (2019), also demonstrate phenotypic classification of PCOS in his study that was 60.2% phenotype A, 16.1% phenotype B, 18.3% phenotype C, and 5.4% phenotype D.[6]The mean and SD of anthropometric characteristics of these 4 phenotypes are presented in table no 2. The average Body weight was 63.57±5.4, 67.28±4.2, 65.90±4.9, 67.32±4.5 of Phenotype A, B, C and D respectively. Average body mass index and the waist-hip ratio was 26.2±1.49 (.90±.033), 28.7±1.34 (.92±.034), 27.7±1.70 (.90±0.28), 28.1±1.33 (.91±.026) of phenotype A, B, C, and D respectively. The waist-hip ratio of the study was similar to the study conducted by RPZH that was 0.91.[7]Various study shows the presence of obesity, abdominal fat deposition in subjects that describes the association of polycystic ovarian syndrome and metabolic abnormalities.[8,9] Maximum women were in the pre-obesity phase as per WHO classification.

Nutritional Status	Phenotype A	Phenotype B	Phenotype C	Phenotype D
Weight	63.57 ± 5.4	67.28 ± 4.2	65.90 ± 4.9	67.32 ± 4.5
BMI	26.2 ± 1.49	28.7 ± 1.34	27.7 ± 1.70	28.1 ± 1.33
WC	101.4 ± 5.12	105.2 ± 4.23	101.8 ± 5.26	102.3 ± 4.02
HC	111.1 ± 5.57	113.6 ± 4.90	113.6 ± 4.89	111.8 ± 5.39
WHR	0.90 ± 0.033	0.92 ± 0.034	0.90 ± 0.28	0.91 ± 0.026
Central Obesity	1.28 ± 0.483	1.23 ± .450	1.28 ± 0.433	1.38 ± 0.408
Dysmenorrhea	19(42.2%)	12(57.1%)	18(56.3%)	29(59.2%)

Table No 2 -Anthropometric classification among phenotypes of PCOS

The data of the study indicates that women with PCOS in different phenotypes were likely to develop central obesity which could trigger the symptoms associated with PCOS. It has been seen in a study, an increased body weight (62.5% women with obesity, 73.9% women with waist circumference ≥88cm) in PCOS is associated with metabolic abnormalities.[10] Elevated level of androgen may contribute to abdominal obesity.[11]Pehlivanov et.al. (2007), concluded waist-hip ratio of phenotype A, B, C, D i.e., 88±.0.04, 0.87±0.04, .86±0.05 and .88±0.06

respectively.[12]Classification of premenstrual syndrome among phenotypes of PCOS is given in table no 3. 44.4% of women from phenotype A and 55.1% women from phenotype D had mild severity (41-80 points) of premenstrual syndrome, 33.3 % women from phenotype A and 20.4 % women from phenotype D have moderate symptoms (81-120 points). Karaca et.al. (2013), investigate 60 women suffering from PMS and PCOS.[13] Among 60 women 25% experienced mild dysmenorrhea and 66% experienced severe dysmenorrhea. Thus, polycystic ovarian syndrome may play an important role in the occurrence of PMS. A case report presented by Jalnapurkar & Findley (2018), describe episodes of PMS with PCOS that was frustration-related mood swing and psychotic symptoms.[14]

Table no- 3 Intensity of premenstrual syndrome among different phenotypes

PMS Intensity	Phenotype A		Phenotype B		Phenotype C		Phenotype D	
	F	Mean ± S.D	F	Mean ± S.D	F	Mean ± S.D	F	Mean ± S.D
No Symptoms	9(20.0)		8(38.1)		13(40.6)		11(22.4)	
Mild Symptoms	20(44.4)	2.17 ± 0.777	10(47.6)	1.80 ± 0.813	11(34.4)	1.90 ± 0.928	27(55.1)	2.02 ± 0.721
Moderate Symptoms	15(33.3)		2(9.5)		6(18.8)		10(20.4)	
Severe	1(2.2)		1(4.8)		2(6.3)		1(2.1)	
Total	45 (100)		21 (100)		32 (100)		49 (100)	

The presentation of symptoms associated with PMS was different in all phenotypes it implies that symptoms may vary from one phenotype to another phenotype that could be affected by hormonal imbalance. The symptoms associated with polycystic ovarian syndrome vary from one subject to another which required phenotypic classifications. The various hypothesis was formulated to understand causative factor related to PCOS such as genetic, environmental factors; some literature also highlights exposure of androgen in intrauterine time as risk factor of occurrence of PCOS. The occurrence of PMS in PCOS is not clear yet but some literature suggests its association with hormonal abnormalities.

Conclusion

Although the study was conducted on very small samples it will provide a database about the presentation of PMS symptoms in various phenotypes of polycystic ovarian syndrome. since the

study was conducted on the Indian population, therefore the data cannot define the impact of cultural differences on symptoms associated with PMS and PCOS. The study provides detailed information and overview to provide medications, dietary, and lifestyle modifications according to symptoms in different phenotypes. The study will also help in identifying further severity such as – morbid obesity, hypercholesteremia, type 2 diabetes, cardiovascular disease, and other metabolic abnormalities.

References

1.Dickerson LM, Mazyck PJ, Hunter MH.2003 Premenstrual syndrome. Am Fam Physician. 15;67(8):1743-52. PMID: 12725453.

2. Steiner, M.(1997) "Premenstrual syndromes." *Annual review of medicine* vol. 48: 447-55. doi: 10.1146/annurev.med.48.1.447.

3.Yonkers, Kimberly Ann et al.(2008) "Premenstrual syndrome." *Lancet (London, England)* vol. 371,9619: 1200-10. doi:10.1016/S0140-6736(08)60527-9.

4.Rotterdam ESHRE/ASRM- Sponsored Polycystic ovarian syndrome consensus workshop group (2004) revised (2003) consensus on diagnostic criteria and long-term health risks related to PCOS. Fertile Sterile (81), 19-25.

5.Padmavathi, M. P., Sankar, D. R., Kokilavani, D. N., Dhanapal, K., & Ashok, B. (2014). Validity and Reliability Study of Premenstrual Syndrome Scale (PMSS). *International Journal of Advances in Nursing Management*, *2*(1), 4-10.

6.Sachdeva, G., Gainder, S., Suri, V., Sachdeva, N., & Chopra, S. (2019). Comparison of the Different PCOS Phenotypes Based on Clinical Metabolic, and Hormonal Profile, and their Response to Clomiphene. *Indian journal of endocrinology and metabolism*, *23*(3), 326–331. https://doi.org/10.4103/ijem.IJEM_30_19.

7.Szczuko, M., Skowronek, M., Zapałowska-Chwyć, M., & Starczewski, A. (2016). Quantitative assessment of nutrition in patients with polycystic ovary syndrome (PCOS). *Roczniki Panstwowego Zakladu Higieny*, *67*(4), 419–426.

8.Thomson, R. L., Spedding, S., & Buckley, J. D. (2012). Vitamin D in the aetiology and management of polycystic ovary syndrome. *Clinical endocrinology*, *77*(3), 343–350. https://doi.org/10.1111/j.1365-2265.2012.04434.x

9.Kalme, T., Koistinen, H., Loukovaara, M., Koistinen, R., & Leinonen, P. (2003). Comparative studies on the regulation of insulin-like growth factor-binding protein-1 (IGFBP-1) and sex

hormone-binding globulin (SHBG) production by insulin and insulin-like growth factors in human hepatoma cells. *The Journal of steroid biochemistry and molecular biology*, *86*(2), 197–200. https://doi.org/10.1016/s0960-0760(03)00268-1

10.Kar S. (2013). Anthropometric, clinical, and metabolic comparisons of the four Rotterdam PCOS phenotypes: A prospective study of PCOS women. *Journal of human reproductive sciences*, *6*(3), 194–200. https://doi.org/10.4103/0974-1208.121422.

11.Yuan, C., Liu, X., Mao, Y., Diao, F., Cui, Y., & Liu, J. (2016). Polycystic ovary syndrome patients with high BMI tend to have functional disorders of androgen excess: a prospective study. *Journal of biomedical research*, *30*(3), 197–202. https://doi.org/10.7555/JBR.30.20140111

12.Pehlivanov, B., & Orbetzova, M. (2007). Characteristics of different phenotypes of polycystic ovary syndrome in a Bulgarian population. *Gynecological endocrinology : the official journal of the International Society of Gynecological Endocrinology*, *23*(10), 604–609. https://doi.org/10.1080/09513590701536246

13.Karaca, I., Kurt, S., Toz, E., Adiyeke, M., & Canda, M. T. (2013). Treatment of premenstrual syndrome with progesterone in women with polycystic ovary syndrome. *Gynecol Obstet*, *3*(151), 2161-93.

14.Jalnapurkar, I., & Findley, J. C. (2018). A case of repeated mixed mood episodes with psychotic symptoms associated with the premenstrual period in a patient with polycystic ovarian syndrome. *Gynecological Endocrinology*, *34*(6), 467-469.