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Review Article

Short Review on Polycystic Ovarian Syndrome

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Abstract:

Polycystic ovarian syndrome (PCOS) is a metabolic disease and a common endocrine system disorder among women of reproductive age. Infrequent or prolonged menstrual periods, excess hair growth, acne, and obesity can occur in women with PCOS. Early diagnosis and treatment along with weight loss may reduce the risk of long-term complications. Now a days PCOS is also the cause of infertility. India is PCOS capital of the world. PCOS management is necessary to reduce its long time complications.

Introduction:

Polycystic ovarian syndrome (PCOS) is now a days a common metabolic syndrome, affecting approximately 12% of women of child bearing age.[1,2] It was first described by Stein and Leventhal in 1935 and links PCOS with anovulation.[3] The diagnostic criteria of PCOS include oligomenorrhea, hirsutism, obesity together with enlarged polycystic ovary (PCO). It is a heterogeneous disorder which may lead to the overexpression of androgens. In 1921, the association between glucose intolerance and hyperandrogenism was reported by Archard and Thiers in 1921 in a diabetic beard women.[4]

Amenorrhea, infertility, hyperandrogenemia, insulin resistance, dyslipidemia are associated with chronic PCOS. PCOS cases are vulnerable to type II diabetes, dyslipidemia, premature arteriosclerosis, and endometrial carcinoma if left untreated. Long term risk may result in primary or secondary infertility. PCOS cases may present even with a complaint of failure to conceive. Many studies showed that PCOS cases are more likely to have increased coronary artery calcium scores and increased carotid intima-media thickness. Besides PCOS can often cause mental health disorders including depression, anxiety, bipolar disorder and binge eating disorder. 15%–30% of PCOS present with PCOS have adult acne.[5,6] The reason behind acne and hirustism among PCOS women may be difference in expression of 5α-reductase in the sebaceous gland and the hair follicle and causing higher dihydro-testosterone in the hair follicle.Women with PCOS, dysregulation ofthe normal follicular development occurs which leads to reduced follicular growth and so anovulation.[7,8] Even it may be the cause of spontaneous abortion which occurs more commonly in PCOS women with incidences ranging from 42%–73%[9,10]. Familial PCOS is a risk factor for this disease as is considered to be a heritable disorder.[11,12] PCOS among first-degree relatives is more prevalent due to genetic influences.[13,14] The issues that hamper progress in this area include the heterogeneity of PCOS phenotypes, difficulty in assigning a phenotype to men, postmenopausal women, and prepubertal girls and difficulties in obtaining large enough sample sizes to allow for adequate statistical power.[15] The sharing of the same susceptibility genes suggests that PCOS is an ancient disorder originating before humans migrated out of Africa.[16]

Based on this current understanding of PCOS, the main thing for PCOS is its management between the patient and medical provider. The management of the PCOS patient often will vary over time as the patient enters different stages of life with different goals. The importance of lifestyle modification toward weight management and maintaining adequate physical activity should be the one constant in the management of these patients. Table 1 includes the researches on PCOS done in India.

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Table-I

Researches on PCOS done in India

Authors	Year	Name of Publication
Sunita J. Ramanandet al.[17]	2013	Clinical characteristics of polycystic ovary syndrome in Indian women
Beena Joshi et al.[18]	2014	A cross-sectional study of polycystic ovarian syndrome among adolescent and young girls in Mumbai, India
Sanjay Chauhan et al.[19]	2014	A cross-sectional study of polycystic ovarian syndrome among adolescent and young girls in Mumbai, India
Swetha Balaji et al.[20]	2015	Urban Rural Comparisons of Polycystic Ovary Syndrome Burden among Adolescent Girls in a Hospital Setting in India
Pratik Kumar Chatterjee et al.[21]	2014	Epidemiological correlates among women with Polycystic ovary syndrome in South India
Kalavathiet al.[22]	2015	A descriptive study of Polycystic ovarian syndrome in adolescent girls among a tertiary care hospital of Bangalore
Sujatha Thathapudi et al.[23]	2014	Anthropometric and Biochemical Characteristics of Polycystic Ovarian Syndrome in South Indian Women Using AES-2006 Criteria
Nagaraja Bhuvanashree et al.[24]	2013	Polycystic ovarian syndrome: Prevalence and its correlates among adolescent girls
Sudhindra M et al.[25]	2011	Prevalence and risk of metabolic syndrome in adolescent Indian girls with polycystic ovary syndrome using the 2009 'joint interim criteria'
Harmandeep Gill et al.[26]	2012	Prevalence of polycystic ovary syndrome in young women from North India: A Community-based study
B Vijaya Gowri et al.[27]	2015	Correlation of skin changes with hormonal changes in polycystic ovarian syndrome: A cross-sectional study clinical study
Suneet Kumar et al.[28]	2016	Prevalence of anxiety and depression in polycystic ovarian syndrome
Jisha Varghese et al.[29]	2015	Prevalence and predictors of metabolic syndrome in women with polycystic ovarian syndrome: a study from Southern India
Sudha Ambigeret al.[30]	2016	Study of Insulin Resistance and Lipid Profile in Polycystic Ovarian Syndrome
Amar Nagesh Kumar et al.[31]	2015	Association of insulin resistance and serum 25–oh vitamin-d in indian women with polycystic ovary syndrome
Pothiraj Pitchai et al.[32]	2016	Awareness of lifestyle modification in females diagnosed with polycystic ovarian syndrome in India: explorative study
Nina Madnani et al.[33]	2013	Polycystic ovarian syndrome
Kar Gayatri et al.[34]	2010	Metformin and N-acetyl Cysteine in Polycystic Ovarian Syndrome - A Comparative Study
Shaini joseph et al.[35]	2016	PCOSKB: A Knowledge Base on genes, diseases, ontology terms and biochemical pathways associated with PolyCystic Ovary Syndrome
Anuradha Kalra et al.[36]	2006	Association of obesity and insulin resistance with dyslipidemia in indian women with polycystic ovarian syndrome
Penagaluru Radha et al.[37]	2016	Comparative study of prevalence of polycystic ovarian syndrome in rural and urban population
Avin S Jamil et al.[38]	2015	A case–control observational study of insulin resistance and metabolic syndrome among the four phenotypes of polycystic ovary syndrome based on Rotterdam criteria
Maniraja Jesintha Mary et al.[39]	2016	PCOSDB: Polycystic Ovary Syndrome Database for manually curated disease associated genes
Lilhareet al.[40]	2012	Percentage of Hirsutism with and without PCOS in Women of Amravati Region, Maharashtra, India
Vijayan CP and Sonia A.[41]	2013	Prevalence of Polycystic Ovary Syndrome among students of a teaching collegiate hospital

Conclusions:

Depending upon the prevalence of PCOS in India, many researches have been done. But we came to the conclusion that proper diagnosis and management of PCOS is essential in order to prevent the long term effects of PCOS. It is clear that the underlying pathophysiology of PCOS is not fully understood. So more extensive research and understanding of the pathophysiology of PCOS will improve treatment success and overall management of patients.

Conflict of interest: None.

References:

1. 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(9):3078-82.
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(9):3078-82.
3. Gambineri A, Pelusi C, Vicennati V, Pagotto U, Pasquali R. Obesity and the polycystic ovary syndrome. Int J Obes Relat Metab Disord. 2002;26(7):883-96.
4. Dunaif A. Insulin resistance and the polycystic ovary syndrome: mechanism and implications for pathogenesis. Endocr Rev. 1997;18(6):774-800.
5. 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(2):453-62.
6. Wijeyaratne CN, Balen AH, Barth JH, Belchetz PE.Clinical manifestations and insulin resistance (IR) in polycystic ovary syndrome (PCOS) among South Asians and Caucasians: is there a difference? Clin Endocrinol (Oxf). 2002;57(3):343-50.
7. Teede H, Deeks A, Moran L. Polycystic ovary syndrome: a complex condition with psychological, reproductive and metabolic manifestations that impacts on health across the lifespan. BMC Med. 2010;30;8:41.
8. Brassard M, AinMelk Y, Baillargeon JP. Basic infertility including polycystic ovary syndrome. Med Clin North Am. 2008;92(5):1163-92.
9. Glueck CJ, Phillips H, Cameron D, Sieve-Smith L, Wang P. Continuing metformin throughout pregnancy in women with polycystic ovary syndrome appears to safely reduce first-trimester spontaneous abortion: a pilot study. Fertil Steril. 2001;75(1):46-52.
10. Jakubowicz DJ, IuornoMJ, Jakubowicz S, Roberts KA, Nestler JE. Effects of metformin on early pregnancy loss in the polycystic ovary syndrome. J Clin Endocrinol Metab. 2002;87(2):524-9.
11. Franks S, Gharani N, Waterworth D, Batty S, White D, Williamson R, McCarthy M. The genetic basis of polycystic ovary syndrome. Hum Reprod. 1997;12(12):2641-8.
12. Legro RS, Driscoll D, Strauss JF 3rd, Fox J, Dunaif A. Evidence for a genetic basis for hyperandrogenemia in polycystic ovary syndrome. Proc NatlAcadSci U S A. 1998;95(25):14956-60.
13. Amato P, Simpson JL. The genetics of polycystic ovary syndrome. Best Pract Res Clin Obstet Gynaecol. 2004;18(5):707-18.
14. Crosignani PG, Nicolosi AE. Polycystic ovarian disease: heritability and heterogeneity. Hum Reprod Update. 2001;7(1):3-7.
15. Goodarzi MO, Dumesic DA, Chazenbalk G, Azziz R. Polycystic ovary syndrome: etiology, pathogenesis and diagnosis. Nat Rev Endocrinol. 2011;7(4):219-31.
16. Diamanti-Kandarakis E, Dunaif A. Insulin resistance and the polycystic ovary syndrome revisited: an update on mechanisms and implications. Endocr Rev. 2012;33(6):981-1030.
17. Sunita J. Ramanand, Balasaheb B. Ghongane, Jaiprakash B. Ramanand, Milind H. Patwardhan, Ravi R. Ghanghas,and Suyog S. Jain. Clinical characteristics of polycystic ovary syndrome in Indian women. Indian J Endocrinol Metab. 2013;17(1): 138–145.

18. Joshi B, Mukherjee S, Patil A, Purandare A, Chauhan S and Vaidya R.A cross-sectional study of polycystic ovarian syndrome among adolescent and young girls in Mumbai, India. Indian J Endocrinol Metab. 2014;18(3):317–324.

19. Chauhan S, Joshi B, Mukherjee S, Patil A, Purandare A, Vaidya R. A cross-sectional study of polycystic ovarian syndrome among adolescent and young girls in Mumbai, India. Indian Journal of Endocrinology and Metabolism, 2014;18(3):317-324.

20. Balaji S, Amadi C, Prasad S, Kasav JB, Upadhyay V, Singh AK, Surapaneni KM and Joshi A.(2015). Urban Rural Comparisons of Polycystic Ovary Syndrome Burden among Adolescent Girls in a Hospital Setting in India. BioMed Research International, 10 pages.

21. ChatterjeeI PK, Mithra PP, Pal R, Chatterjee P, Unnikrishnan B,Vinodini NA,Tripathi A, Suman VB, Singhal A and Pai SR. Epidemiological correlates among women with Polycystic ovary syndrome in South Int J Curr Res Aca Rev 2014;2(9):181-86.

22. Kalavathi. D. Biradar, Amrita N Shamanewadi. A descriptive study of Polycystic ovarian syndrome in adolescent girls among a tertiary care hospital of Bangalore . Indian Journal of Basic and Applied Medical Research. 2015;4(2):453-457.

23. Thathapudi S, Kodati V, Erukkambattu J, Katragadda A, Addepally U, Hasan Q. Anthropometric and Biochemical Characteristics of Polycystic Ovarian Syndrome in South Indian Women Using AES-2006 Criteria. Int J Endocrinol Metab. 2014;12(1):e12470.

24. Bhuvanashree N, Gupta S, Anitha M, Venkatarao E. Polycystic ovarian syndrome: Prevalence and its correlates among adolescent girls. Annals of tropical medicine and public health. 2013;6(6):632-636.

25. Sudhindra M. Bhattacharya, Ayan Jha. Prevalence and risk of metabolic syndrome in adolescent Indian girls with polycystic ovary syndrome using the 2009 'joint interim criteria'. The Journal of Obstetrics and Gynecology Research. 2011;37(10):1303-07.

26. Gill H, Tiwari P, Dabadghao P. Prevalence of polycystic ovary syndrome in young women from North India: A Community-based study 2012;16(8):389-92.

27. Gowri BV, Chandravathi PL, Sindhu PS, Naidu KS. Correlation of skin changes with hormonal changes in polycystic ovarian syndrome: A cross-sectional study. Clinical study 2015;60(4):419.

28. Upadhyaya SK, Sharma A, Agrawal A. Prevalence of anxiety and depression in polycystic ovarian syndrome. International Journal of Medical Science and Public Health 2016;5(04):681-83.

29. Varghese J, Kantharaju S, Thunga S, Joseph N, Singh PK. Prevalence and predictors of metabolic syndrome in women with polycystic ovarian syndrome: a study from Southern India.Ind J reprod Contracept Obster Gynecol 2015;4(1):113-118

30. Sudha A. Study of Insulin Resistance and Lipid Profile in Polycystic Ovarian Syndrome. International Journal of Scientific and Research Publications 2016;6(2).

31. Kumar AN, Naidu JN, Satyanarayana U, Anitha M, Ramalingam K. Association of insulin resistance and serum 25–OH vitamin-d in indian women with polycystic ovary syndrome. International Journal of Clinical Biochemistry and Research, 2015;2(1):22-26.

32. Pitchai P, Sreeraj SR, Anil PR. Awareness of lifestyle modification in females diagnosed with polycystic ovarian syndrome in India: explorative study. International Journal of Reproduction, Contraception, Obstetrics and Gynecology 2016;5(2):470- 76.

33. Madnani N, Khan K, Chauhan P, Parmar G. Polycystic ovarian syndrome 2013;79(3):310-321.

34. Gayatri K, Kumar J Sand Kuma BB. Metformin and N-acetyl Cysteine in Polycystic Ovarian Syndrome—A Comparative Study. Indian Journal of clinical medicine 2010;1:7-13.

35. Joseph S, Barai RS, BhujbalraoR and Thomas IS. PCOSKB: A Knowledge Base on genes, diseases, ontology terms and biochemical pathways associated with Poly Cystic Ovary Syndrome. Nucleic acid research 2014;44(17).

36. Kalra A, Nair S, Rai L. Association of obesity and insulin resistance with dyslipidemia in indian women with polycystic ovarian syndrome. Indian Journal of Medical Sciences Indian Journal of Medical Science 2006;60(11):447-453.

37. Radha P, Devi RS, Madhavi J. Comparative study of prevalence of polycystic ovarian syndrome in rural and urban population. J Adv Med Dent Scie Res 2016;4(2):90-95.

38. Avin S Jamil et al. A case–control observational study of insulin resistance and metabolic syndrome among the four phenotypes of polycystic ovary syndrome based on Rotterdam criteria. Reproductive Health 2015;12(7).

39. Mary MJ, Vetrivel U, Munuswamy D, Melanathuru V. PCOSDB: PolyCystic Ovary Syndrome Database for manually curated disease associated genes. Bioinformation 2016;12(1):4-8.

40. Lilhare MU, Pawar SS. Percentage of Hirsutism with and without PCOS in Women of Amravati Region, Maharashtra, India.Int J of science and research 2014;3(7):1258.

41. Vijayan CP and Sonia A. Prevalence of Polycysic Ovary Syndrome among students of a teaching collegiate hospital. Health Sciences 2013;2(1):4.