CODEN [USA]: IAJPBB **ISSN: 2349-7750**

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
http://doi.org/10.5281/zenodo.3246511

Available online at: http://www.iajps.com ***Research Article***

ANALYSIS OF EFFECT OF METFORMIN IN POLYCYSTIC OVARIAN SYNDROME IN LOCAL FEMALE POPULATION OF PAKISTAN

Dr Misbah Javed[1], Dr Asifa Kareem[2], Dr Rab Nawaz[3]
[1]Women Medical Officer at Medicare Hospital, Multan
[2]Women Medical Officer at BHU 14/8-R, Khanewal
[3]Medical Officer at RHC Khalian Bajwat, Sialkot

Article Received: April 2019 **Accepted:** May 2019 **Published:** June 2019

Abstract:
Introduction: *Polycystic ovary syndrome (PCOS) is the most common female endocrine disorder, affecting approximately 4%–18% women of reproductive age.*
Aims and objectives: *The main objective of the study is to analyze the effect of metformin in polycystic ovarian syndrome in local female population of Pakistan.*
Material and methods: *This cross sectional study was conducted in Medicare Hospital, Multan during December 2018 to March 2019. The data was collected from 100 female patients who visited the OPD of the hospital during their diseases. All those female who were suffering from PCOS, included in this study. All cases of infertile women with PCOS from 18 to 45 years old were analyzed in this study.*
Results: *The data were collected from 100 female patients. The results showed that patients who received metformin did not exert better outcomes in neither primary endpoint, including live birth. There were not significant differences in all adverse events. All the values were expressed in mean and standard deviation.*
Conclusion: *It is concluded that long-term use of metformin to prevent remote complications of PCOS is uncertain and a significant amount of work is needed before a decision can be made on this front.*

Corresponding author:
Dr Misbah Javed,
Women Medical Officer at Medicare Hospital, Multan.

QR code

Please cite this article in press Misbah Javed et al., ***Analysis Of Effect Of Metformin In Polycystic Ovarian Syndrome In Local Female Population Of Pakistan.,*** *Indo Am. J. P. Sci, 2019; 06[06].*

INTRODUCTION:

Polycystic ovary syndrome (PCOS) is the most common female endocrine disorder, affecting approximately 4%–18% women of reproductive age. It is a heterogeneous androgen excess disorder with different degrees of reproductive and metabolic dysfunctions. Metabolic disturbances including insulin resistance, hyperinsulinemia and dyslipidemia, are common features in the majority of women with PCOS [1]. Women with PCOS may also be at elevated risk of vitamin D deficiency (VDD). In contrast to a prevalence of 20%–48% among the general adult population, a relative higher prevalence of VDD is observed among women with PCOS. Additionally, positive associations of VDD with some well-known comorbidities of PCOS including type 2 diabetes, insulin resistance, metabolic syndrome, and cardiovascular diseases, are reported [2]. In this regard, an increasing number of studies have been conducted to investigate the specific relationship between vitamin D status and PCOS [3]. Although several studies have suggested that lower vitamin D levels are associated with increased risk of insulin resistance and metabolic disturbance among women with PCOS, the current findings are inconsistent [4].

Polycystic ovary syndrome (PCOS) is the most common endocrinopathy in women of reproductive age, with a prevalence up to 10% depending on which diagnostic criteria are used. It is characterized by ovulatory dysfunction, hyperandrogenism and/or polycystic ovarian morphology [5].

Metformin is the only remaining member of the biguanide family that has been used for the treatment of diabetes for a long time. It is the most commonly used drug in T2DM. Metformin works by improving the sensitivity of peripheral tissues to insulin, which results in a reduction of circulating insulin levels. Metformin inhibits hepatic gluconeogenesis and it also increases the glucose uptake by peripheral tissues and reduces fatty acid oxidation. Metformin has a positive effect on the endothelium and adipose tissue independent of its action on insulin and glucose levels [6].

AIMS AND OBJECTIVES:

The main objective of the study is to analyze the effect of metformin in polycystic ovarian syndrome in local female population of Pakistan.

MATERIAL AND METHODS:

This cross sectional study was conducted in Medicare Hospital, Multan during December 2018 to March 2019. The data was collected from 100 female patients who visited the OPD of the hospital during their diseases. All those female who were suffering from PCOS, included in this study. All cases of infertile women with PCOS from 18 to 45 years old were analyzed in this study. All patients underwent metformin on cycle day 3 for consecutive 5 days for up to 5 menstrual cycles. If there was a nonresponse or a poor ovulatory response occurred, the dose was increased in subsequent cycles in the either group. The maximum daily dose of metformin was 7.5 mg.

STATISTICAL ANALYSIS:

All outcome and characteristic values were analyzed by using SPSS software (SPSS V.17.0).

RESULTS:

The data were collected from 100 female patients. The results showed that patients who received metformin did not exert better outcomes in neither primary endpoint, including live birth. There were not significant differences in all adverse events. All the values were expressed in mean and standard deviation.

Table 01: Analysis of outcomes of metformin group

	Metformin group	***T***	***P* value**
Total number of follicles	4.4 ± 0.4	4.3	.042[a]
Number of follicles >14 mm	2.1 ± 0.3	6.13	.008[a]
Number of follicles >18 mm	2.3 ± 0.1	5.03	.03[a]
Pretreatment endometrial thickness (mm)	4.5 ± 0.4	1.41	.52
Endometrial thickness at hCG (mm)	8.1 ± 0.2	5.44	.021[a]
Serum E_2 (pg/mL)	255.1 ± 64.2	4.12	.022[a]
Serum progesterone (ng/mL)	7.1 ± 0.9	6.33	.024[a]
Duration of stimulation (days)	12.1 ± 1.38	4.91	.036[a]
Pregnancy/cycle	82/540 (15.1%)	1.33	.72
Miscarriage/patient	4 (12.1%)	1.73	.43

DISCUSSION:

Comparing metformin responders and nonresponders with regard to clinical and laboratory characteristics, there were no significant differences in BMI, waist or hip circumference, waist/hip ratio, hirsutism, LH, FSH, or LH/FSH ratio [8]. Thus, metformin can be given to all patients with CC resistance, because its efficacy is not limited to a specific abnormality. Achieving weight reduction is difficult, particularly as the metabolic status of patients with PCOS conspires against weight loss [7]. Metformin can be used in patients with hirsutism, and there is no need to add dexamethasone to reduce adrenal androgen production. The use of metformin in PCOS has received a lot of attention for obvious reasons. Once thought of as a wonder drug, the accumulating evidence on the efficacy of metformin has been disappointing. The lack of an emphatic or overwhelming efficacy is largely due to the patients' variability in phenotypes and their metabolic parameters [9]. Some studies have tried to identify the patients that are most likely to benefit from metformin, yet again the results have not been forthcoming. Consequently the burden falls back on the clinician who should be familiar with the gist of the available evidence to be able to identify the right patient for the treatment in hand. Obtaining an evidence of IR is a good starting point prior to recommending its use [10].

Based on the available evidence, however, metformin does not replace the need for lifestyle modification among obese and overweight PCOS women. The evidence categorically does not encourage its use to help weight loss either although it may be useful in redistributing adiposity according to some evidence. It takes a longer time to help with ovulation induction hence it fared worse than clomiphene citrate in the head-to-head studies, however, as a long-term treatment, metformin supplemented with lifestyle changes may prove superior [11]. Its benefit in IVF patients is only confirmed with regard to reduction of the incidence of OHSS which is important given its high risk among PCOS patients. As for its usefulness in pregnancy, the jury are still out regarding its role in reducing the risk of miscarriage; however, the available evidence regarding GDM prevention is encouraging [12].

CONCLUSION:

It is concluded that long-term use of metformin to prevent remote complications of PCOS is uncertain and a significant amount of work is needed before a decision can be made on this front. Stipulations from studies carried out on the general population is not the same and can be misleading given the diversity of PCOS patients with regard to their metabolic comorbidities.

REFERENCES:

1. Zawadski J, Dunaif A. Diagnostic criteria for polycystic ovary syndrome: towards a rational approach. In: Dunaif A, et al., editors. Polycystic Ovary Syndrome. Boston: Blackwell Scientific; 1995. pp. 377–84.
2. Azziz R, Carmina E, Dewailly D, Diamanti-Kandarakis E, Escobar-Morreale HF, Futterweit W, et al. Task Force on the Phenotype of the Polycystic Ovary Syndrome of The Androgen Excess and PCOS Society. The androgen Excess and PCOS Society criteria for the polycystic ovary syndrome: the complete task force report. Fertil Steril. 2009;91(2):456–88.
3. Practice Committee of American Society for Reproductive Medicine. Definitions of infertility and recurrent pregnancy loss: a committee opinion. Fertil Steril. 2013;99(1):63.
4. Nahuis MJ, Oosterhuis GJ, Hompes PG, van Wely M, Mol BW, van der Veen F. The basic fertility workup in women with polycystic ovary syndrome: a systematic review. Fertil Steril. 2013;100(1):219–25.
5. Thessaloniki ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group (2008) Consensus on infertility treatment related to polycystic ovary syndrome. Hum Reprod. 2013;23(3):462–77.
6. Felemban A, Tan SL, Tulandi T. Laparoscopic treatment of polycystic ovary syndrome with insulated needle cautery, a reappraisal. Fertil Steril 2000;73:266–9.
7. Kim LH, Taylor AE, Barbieri RL. Insulin sensitizers and polycystic ovary syndrome: can a diabetes medication treat infertility? Fertil Steril 2000;73;1097–8.
8. Melo AS, Vieira CS, Barbieri MA, Rosa-E-Silva AC, Silva AA, Cardoso VC, et al. High prevalence of polycystic ovary syndrome in women born small for gestational age. Hum Reprod. 2010;25(8):2124–31.
9. 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(6):2745–49. doi: 10.1210/jc.2003-032046
10. Wang S, Alvero R. Racial and ethnic differences in physiology and clinical symptoms of polycystic ovary syndrome. Semin Reprod Med. 2013;31(5):365–69.
11. Diamanti-Kandarakis E., Christakou C.D., Kandaraki E., Economou F.N. (2010) Metformin: an old medication of new fashion: evolving new molecular mechanisms

and clinical implications in polycystic ovary syndrome. Eur J Endocrinol 162: 193–212

12. Glueck C.J., Bornovali S., Pranikoff J., Goldenberg N., Dharashivkar S., Wang P. (2004) Metformin, pre-eclampsia, and pregnancy outcomes in women with polycystic ovary syndrome. Diabet Med 21: 829–836.