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Research Article

IMPACTS OF CABERGOLINE MANAGEMENT ON UTERINE BLOOD FLOW AMONG FEMALES PRESENT WITH POLYCYSTIC OVARY SYNDROME

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Abstract:

Objectives: The purpose of this study is to find out the impacts of the cabergoline management on uterine perfusion among females present with Polycystic Ovary Syndrome.

Methodology: 40 females were the participants of this research work. We divided the patients into two groups with twenty patients in each. All the patients were present with Polycystic Ovary Syndrome. The Polycystic Ovary Syndrome standard included amenorrhea, results of laboratory depending upon the rise of the androgen and then ultrasonography confirmed the present of polycystic Ovary Syndrome. Patient present with pregnancy, lactation or other serious diseases were not the part of this research work. After selecting both groups of placebo and intervention, we performed Doppler ultrasound for the patients of two groups. Then, we administered a weekly cabergoline dose of 0.50 mg to the patients of intervention group for a twelve weeks' duration. We managed the patients of placebo group with placebo in the same manner. After the completion of twelve weeks, we performed Doppler ultrasound and we recorded the results into check lists.

Results: There was no significant disparity in the patients of both groups regarding age, education level, profession, marriage duration, infertility type, Resistance Index findings and pulsatility-index before the intervention. Patients suffering from Polycystic Ovary Syndrome under Cabergoline management displayed significant rise in the blood flow of uterine. pulsatility-index was before 2.65 ± 0.52 and after 1.98 ± 0.52 and Resistance Index was before 0.85 and it was 0.77 after intervention, yet we found no difference in the patients suffering from Polycystic Ovary Syndrome having placebo treatment.

Conclusion: There was more resistance in the blood flow of uterine in the patients of polycystic Ovary Syndrome as compared to the healthy population. However, administration of cabergoline proved to rise the blood perfusion of uterine and regulated the cycle of menstruation.

KEYWORD: infertility, placebo, blood flow, perfusion, Polycystic Ovary Syndrome, resistance.

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INTRODUCTION

Polycystic Ovary Syndrome is a most frequent abnormality influencing the females of fertility age, present with amenorrhea with laboratory findings of hyper-androgenemia. Polycystic Ovary Syndrome is a polygenic abnormality [1]. The symptoms of this complication initiated in age of puberty [2]. Polycystic Ovary Syndrome is one of the most important reasons of infertility among females. Majority of females with Polycystic Ovary Syndrome face ovulation lack and they may suffer from many challenges to have pregnancy [1, 3]. This ovulation lack is the cause of increase in the risk of uterine or breast cancers. There is occurrence of Polycystic Ovary Syndrome in 4% to 6% females [4, 5]. Following criteria is the basic for the diagnostic of the Polycystic Ovary Syndrome; the manifestation of anovulation by amenorrhea, biochemical proofs of excess of blood androgen and the presence of polycystic ovaries as identified by ultrasonography [1, 2].

Various research works utilizing Doppler ultrasound state high resistance of blood flow in uterine in such patients [5-8]. There is a vital role of blood flow of uterine in ER (Endometrial Receptivity), rise in the Pulsatility Index of artery of uterine is present in reports of interfile patients present with less pregnancy chances [9]. The high restriction in blood flow of uterine among patients of Polycystic Ovary Syndrome can decrease the endometrial receptivity and it leads to the risks of miscarriage [10] as well as negative impact on the pregnancy outcome [11]. The research works conducted on the impacts of cabergoline on uterine blood flow in patients with Polycystic Ovary Syndrome display that it has the ability to rise the blood flow of uterine [12, 13]. There is very high rate of incidence of Polycystic Ovary Syndrome and there is also high infertility rate among females who are suffering from this very disease. Few research works are available about the impacts of cabergoline on blood flow of uterine but data regarding this topic is not present in Pakistan.

METHODOLOGY:

The participants of this research work were fertile females present with Polycystic Ovary Syndrome with at least twenty years of age. The females present with pregnancy, lactation and other serious complications were not the participants of this research work. We divided 40 patients into two groups with twenty patients in each group. We obtained the consent from the patients of this research work after explaining them the objective of this research work. We performed the Doppler ultrasound of all the patients of this research work. We evaluated both left and right sides but our main focus was only right side. To avoid the influence of circadian rhythm, we took all the ultrasounds at 5-8 o'clock in the evening time and we performed the Doppler ultrasound by the utilization of similar device on same location.

We carried out ultrasound in the duration of early follicular phase of cycle of menstruation from day two to six. In next phase of this research work, we administered oral cabergoline to intervention group after dinner with dose 0.50 mg every week for complete weeks. We also administered placebo after dinner in the same manner for complete twelve weeks in the patients of control group. During 3rd month after the therapy, we performed the Doppler ultrasound for evaluation of blood flow of uterine in the patients of both groups and we recorded the results according to checklists. SPSS V.23 was in use for the statistical analysis of the collected information. Kolmogorov-Smirnov method displayed that there was non-normally distribution of data. We used the descriptive statistics for the comparison of the blood flow of uterine in the patients of both groups.

RESULTS:

We found no significant differences in the data of demography as occupation, age, level of education, and infertility type and marriage duration of the patients (Table-1).

Table-I: Distributions and Frequency of Demographic Characteristics in the Two Groups

Variable		Cabergoline	Placebo	P value
		Mean \pm SD	Mean \pm SD	
Occupation	House keeper	16 \pm 8	14 \pm 73.7	0.86
	Employed	4 \pm 20	5 \pm 26.3	
Education	Under secondary	7 \pm 35	8 \pm 42.1	0.85
	Under graduate	7 \pm 35	7 \pm 36.8	
	Graduate	6. \pm 30	4 \pm 21.1	
Type of infertility	Primary	11. \pm 84.6	11 \pm 78.6	0.98
	Secondary	2. \pm 15.4	3 \pm 21.4	
Age (Mean \pm SD)		25. \pm 4.5	24 \pm 4.6	0.73
Duration of marriage		5.9 \pm 5.5	4.9 \pm 4	0.72
Duration of infertility		4.9 \pm 3.9	3.9 \pm 3.5	0.52

Before the intervention, Pulsatility-Index was 2.65 ± 0.5 in the group of cabergoline and 2.37 ± 0.5 in the group of placebo, this finding did not display an important difference between patients of both groups ($P= 0.09$). Resistance Index was 0.85 ± 0.07 in the group of cabergoline and 0.84 ± 0.07 in the group of placebo, this finding also did not show any significant disparity ($P= 0.49$). After the intervention, 1.98 ± 0.5 was pulsatility-index in group of Cabergoline and 2.38 ± 0.5 in group of placebo, this difference was significant in both groups ($P= 0.03$). Post-intervention, Resistance Index was 0.77 ± 0.1 in cabergoline group and 0.85 ± 0.06 in group of placebo, this was also significant disparity statistically ($P= 0.015$) (Table-2). In the patients of placebo group, prior-intervention, mean uterine artery resistance index was 0.84 ± 0.07 and post-intervention it was 0.85 ± 0.06 , showing no significant association ($P= 0.81$).

Table-II: Comparison of Pulsatility-Index and Resistance Index in Cabergoline Group Before and After The Intervention

Variable	Group	No.	Mean \pm SD	P -Value
Pulsatility-Index Before	Cabergoline	20	2.65 ± 0.5	0.09
	placebo	19	2.37 ± 0.5	
Resistance Index before	Cabergoline	20	0.85 ± 0.07	0.49
	placebo	19	0.84 ± 0.07	
Pulsatility-Index After	Cabergoline	20	1.98 ± 0.5	0.03
	placebo	19	2.38 ± 0.5	
Resistance Index after	Cabergoline	20	0.77 ± 0.1	0.015
	placebo	19	0.85 ± 0.06	

Furthermore, mean of pulsatility-index was 2.37 ± 0.5 prior-intervention and 2.38 ± 0.5 post-intervention, therefore no important association was present between both groups ($P= 0.953$). In the patients of Cabergoline group, mean Resistance Index was 0.85 ± 0.07 prior-intervention, reduced to 0.77 ± 0.1 after-intervention, showing a significant difference ($P= 0.1$). Mean pulsatility-index was 2.65 ± 0.5 prior-intervention and 1.98 ± 0.5 after-intervention, showing a significant difference ($P= 0.01$) (Table-3). We did not observe any side effects of this medication on our population; but, only patient got exclusion from this research work because of the pregnancy.

Table-III: Comparison of Pulsatility-Index and Resistance Index, Before and After Intervention in Placebo Group

Group			Mean \pm SD	P - Value
Placebo	Resistance Index	Prior	0.84 ± 0.07	0.81
		After	0.85 ± 0.06	
	Pulsatility-Index	Prior	2.37 ± 0.5	0.95
		After	2.38 ± 0.49	
Cabergoline	Resistance Index	Prior	0.85 ± 0.07	0.01
		After	0.77 ± 0.10	
	Pulsatility-Index	Prior	2.65 ± 0.52	0.01
		After	1.98 ± 0.52	

DISCUSSION:

The research works conducted in past stated that females with enhanced pulsatility-index of uterine artery were present with very low chances of getting pregnancy [14]. In the patients of Polycystic Ovary Syndrome, there is very important role of some medications as cabergoline and there are wide studies on the effectiveness of this drug in whole world [13]. In this current research work, we were not able to find any significant disparity between the

patients of both groups about their characteristics of demography. In this current research work, the mean pulsatility-index in the patients was 2.51 ± 0.52 which is much less than the average pulsatility-index as compared to the same research works as 3.98 ± 0.52 and 2.97 ± 0.9 . This issue can be the outcome of the differences in races and environments; hence, there is need of further research works to obtain more precise results [10, 12]. In the next stage of this research work, mean pulsatility-index in the patients

of Poly-Cystic Ovary Syndrome of intervention group reduced to 1.980 ± 0.52 in comparison with 2.65 ± 0.52 prior-treatment with Cabergoline ($P < 0.001$).

In a same research work, mean pulsatility-index in the group of controls was 1.59 ± 0.2 [12]. This current research work which is one of some research studies displaying the influence of cabergoline on the blood flow of uterine artery, was comparable with many research works conducted internationally but the patients suffering from Poly-Cystic Ovary Syndrome in our research work showed more resistance of uterine artery [15,16,17]. The findings of this research work showed that cabergoline has the ability to increase the blood flow of uterine.

CONCLUSION:

Cabergoline is much effective drug with very low number of side effects. This drug can be used by the young patients who are present with Polycystic Ovary Syndrome and they have determination to have pregnancy. Because of the impacts of cabergoline on the regulation of menstruation and improvement in blood perfusion of uterine, cabergoline therapy can facilitate the pregnancy in patients suffering from Polycystic Ovary Syndrome. Cabergoline can be considered safe for pregnancies because of no side effects.

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