LETROZOLE VERSUS HORMONAL REPLACEMENT FOR ENDOMETRIAL PREPARATION IN FROZEN THAWED EMBRYO TRANSFER IN WOMEN WITH POLYCYSTIC OVARY SYNDROME

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Introduction

PCOS is a common endocrine disorder that can affect endometrial receptivity through a variety of ways, consequently leading to low pregnancy rate and high abortion rate in patients. Importantly, endometrial receptivity and embryo quality are two main factors affecting the success rate of FET in PCOS patients.

Synchronization between receptive endometrium and embryo development is critical for pregnancy establishment. Natural protocol is not commonly used since women with PCOS usually have irregular menstruation or oligo-anovulation, but artificial cycle and ovarian stimulation have been wildly applied. Hormone replacement therapy (HRT) is used in women with PCOS in an artificial cycle where the endometrium is prepared with programmed estrogen and progesterone, leading to a fixed time for ET. Stimulation protocols use ovulation stimulation medications, including clomiphene citrate (CC), letrozole, and gonadotropins to mimic the natural process of follicular development and facilitate endogenous estradiol through ovulation induction. HCG is commonly employed as a surrogate LH surge to stimulate the maturation of oocyte and increase the endometrial receptivity.

Aim of the work

This study aimed to compare reproductive outcomes between letrozole and HRT for endometrial preparation in frozen thawed embryo transfer in polycystic ovary syndrome patients. **reproductive outcomes:** Clinical pregnancy which was defined as the presence of gestational sac with fetal heart beat on ultrasound conducted 4 weeks after ET. Endometrial thickness and pattern at the day of embryo transfer. Implantation rate.

Subjects and Methods

This prospective randomized study was conducted on PCOS cases. The present study was carried out on 130 participants who have frozen embryos and undergoing endometrial preparation for FET. They were allocated into two groups randomly by pick up closed envelope. Group I: 65 participants were stimulated with letrozole and Group II: 65 participants, where endometrium was prepared by HRT.During endometrial preparation in letrozole group and HRT group, endometrium thickness and endometrial pattern were recorded at the day of embryo transfer, also number of embryos and day of embryos vitrification were recorded. Clinical pregnancy and implantation rate were recorded 4 weeks after embryo transfer.

Results

Regarding Group I clinical pregnancy was positive in 28 patients (43%) and 25 patients (38.5%) in Group II in. There was no significant difference observed between the two groups (p = 0.592).

Table (1):Comparison between the two studied groups according to clinical pregnancy

Clinical pregnancy	Group I (n = 65)		Group II (n = 65)		c^2	p
	No.	%	No.	%		
Negative	37	56.9	40	61.5	0.287	0.592
Positive	28	43.1	25	38.5		

There was no significant difference observed between the two groups according to clinical pregnancy rate regarding the day of embryos vitrification. Clinical pregnancy rate is significantly higher regarding day 5 embryos vitrified compared to day 3 embryos vitrified in letrozole group (p=0.043).

Table (2): Comparison between the two studied groups according to clinical pregnancy rate regarding the day of embryos vitrification

Clinical pregnancy	Group I		Group II		c^2	p
	No.	%	No.	%		
Day 3 of embryos vitrification	(n = 21)		(n = 28)			
Negative	16	76.2	19	67.9	0.408	0.523
Positive	5	23.8	9	32.1		
Day 3 of embryos vitrificationtransferred 24hr after embryos thawing	(n = 25)		(n = 26)			
Negative	14	56.0	15	57.7	0.015	0.903
Positive	11	44.0	11	42.3		
Day 5 of embryos vitrification	(n = 19)		(n = 11)			
Negative	7	36.8	6	54.5	0.889	^{FE}p= 0.454
Positive	12	63.2	5	45.5		
$c^2(p_1)$	6.313* (0.043*)		0.862 (0.650)			

There was no significant difference observed between the two groups regarding clinical pregnancy for endometrial pattern. Clinical pregnancy rate significantly higher with triple line endometrium regarding HRT group (p=0.014).

Table (3):Comparison between the two groups according to clinical pregnancy rate regarding to endometrial pattern, triple line and not triple line

Clinical pregnancy	GroupI		GroupII		c^2	p
	No.	%	No.	%		
Triple line endometrial pattern	(n =52)		(n =49)			
Negative	29	55.8	26	53.1	0.075	0.785
Positive	23	44.2	23	46.9		
Not triple line endometrial pattern	(n =13)		(n =16)			
Negative	8	61.5	14	87.5	2.640	0.192
Positive	5	38.5	2	12.5		
$c^2(p_1)$	0.141 (0.707)		6.044*(0.014*)			

Conclusion

There is no superiority between the letrozole group and HRT group as there was no significant difference observed between the two studied groups regarding clinical pregnancy, endometrial thickness and pattern at the day of embryo transfer and implantation rate after evaluating the two endometrial preparation methods on PCOS patients who have frozen embryos undergoing endometrial preparation for FET. Clinical pregnancy rate is significantly higher regarding day 5 embryos vitrified compared to day 3 embryos vitrified in letrozole group. Clinical pregnancy rate significantly higher when number of embryos transferred were more than one embryo in letrozole and HRT group. Clinical pregnancy rate significantly higher with triple line endometrium regarding HRT group.