STUDYING THE EFFECT OF ESTRAIOL PRETREATMENT ON FOLLICULAR SYNCHRONIZATION AND INTRACYTOPLASMIC SPERM INJECTION (ICSI) OUTCOME IN ANTAGONIST CYCLES

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Introduction

Infertility is considered to be a disease process worthy of investigations and treatment. ART is one of options available to achieve pregnancy in infertile couples. ICSI is a technique used during in vitro fertilization. (LH) surge was a major impediment led to the cancellation of many IVF cycles. (GnRH-a) was introduced as a method of pituitary down-regulation used to prevent a premature LH surge. There is more emphasis on safer protocols reducing incidence of OHSS; therefore, antagonist regimens would be the treatment of choice in hyper-responders. The administration of estradiol in the luteal phase is one of these methods used for achievement of follicular synchronization in antagonist cycles as it may induce FSH receptor formation in more resistant follicles and may result in more coordinated gonadotropin response. We decided to verify whether luteal E_2 could produce coordination of follicular growth during COH and improve ICSI results.

Aim of the work

The aim of this work was to study the effect of estradiol pretreatment on follicular synchronization and intracytoplasmic sperm injection (ICSI) outcome in antagonist cycles.

Patients and Methods

This was a prospective randomized controlled trial.

Group 1: 57 cases were pretreated with 4 mg estradiol valerate once daily starting 5 days before menses.

After start of menses, estradiol was stopped and stimulation using 225 to 375 IU of hMG.

Group 2: 57 cases stimulated with hMG (225 to 375 IU) according to clinical evaluation on cycle day 2 without pretreatment.

Using fixed antagonist protocol in both groups, when 3 follicles or more reached18 mm, triggering, oocyte retrieval done 36 hours later and luteal phase support given, ICSI was performed to mature oocytes.

On day 3 of ICSI, of the best quality embryos were transferred.

Outcome measures: Stimulation days, number of gonadotropin ampoules, number of follicles by U/S, Serum estradiol and progesterone , endometrial thickness, number of mature oocytes and good quality embryos, Pregnancy rate by serum B-hCG 14 days after embryo transfer and clinical pregnancy rate.

Results

Table 1: Daily dose of hMG used in stimulation, days of stimulation and total number of gonadotropin ampoules used

	Group 1 (n = 57)	Group 2 (n = 57)	U	P
Daily dose of hMG				
Min. – Max.	225.0-375.0	225.0-375.0		
Mean ± SD.	320.18±63.81	342.89±52.12	1314.5*	0.048*
Median (IQR)	375(225.0-375.0)	375(300.0-375.0)		
Stimulation (days)				
Min. – Max.	7.0-15.0	7.0-15.0		
Mean ± SD.	10.49±1.86	11.40±1.84	1360.5	0.049*
Median (IQR)	10.0(9.0-12.0)	11.0(10.0-13.0)		
Total number of gonadotropin ampoules 75 IU.				
Min. – Max.	24.0-75.0	27.0-75.0		
Mean ± SD.	44.68±11.41	52.25±11.65	1221.50*	0.041*
Median (IQR)	45.0(35.0-50.0)	55.0(44.0-60.0)		

Table 2: Comparison between the two studied groups according to Ratio of mature oocytes to number of follicles on day of hCG

	Group 1 (n = 57)	Group 2 (n = 57)	U	P
Ratio of mature oocytes to number of follicles on day of hCG				
Min. – Max.	0.17 – 1.0	0.16 – 1.0		
Mean ± SD.	0.69 ± 0.29	0.69 ± 0.25	1588.0	0.835
Median (IQR)	0.75(0.43-1.0)	0.75(0.50-0.92)		

Table 3: Comparison between the two studied groups according to pregnancy rate, number of sacs and clinical pregnancy rate

	Group 1 (n = 57)		Group 2 (n = 57)		χ^2	P
	No.	%	No.	%		
Pregnancy test						
Negative	13	22.8	23	40.4	4.060*	0.044*
Positive	44	77.2	34	59.6		
No of sacs	(n = 44)		(n = 34)			
1	25	56.8	24	70.6	2.924	MCp= 0.231
2	13	29.5	9	26.5		
3	6	13.6	1	2.9		
Clinical pregnancy						
Present	38	66.7	31	54.4	1.799	0.180
Absent	19	33.3	26	45.6		

Conclusion

From results of our study we have concluded that:

- Luteal estradiol in antagonist cycles improves the outcome of ICSI procedure by producing higher positive pregnancy rate.
- The number of gonadotropin ampoules used for COH and the duration of stimulation decrease with the pretreatment with estradiol which can reduce the cost.
- Implantation rate is improved by luteal estradiol administration.