THE EFFECT OF HUMAN CHORIONIC GONADOTROPIN TRIGGER AFTER LETROZOLE OVULATION INDUCTION IN POLYCYSTIC OVARIAN SYNDROME PATIENTS

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Introduction

Polycystic Ovary Syndrome (PCOS) is the most common condition that leads to anovulatory infertility in women. There has been a significant increase in the number of women that present with PCOS and leading to increased scientific examination towards understanding the syndrome.The syndrome has several clinical manifestations, and anovulatory infertility is one of the most common.Letrozole is an aromatase inhibitorhas been widely used for ovulation induction. Letrozole prevents the conversion of androgen to oestrogen by inhibiting aromatase activity. This releases the negative feedback effect of oestrogen on the hypothalamus and pituitary leading to release of gonadotrophins; causing follicular growth and subsequent ovulation. It does not have any adverse effects on the fetus and is safe.[7,8] Recently , letrozole has been suggested by ESRHE as the first line for ovulation induction in polycystic ovarian syndrome patients. The addition of an ovulatory dose of human chorionic gonadotropin (HCG) has been used as an adjuvant to letrozole treatment to trigger ovulation.[10] When size of pre-ovulatory follicle reaches to 18-20 mm. HCG has similar activity to LH and binds to its receptor. Ovulation occurs 38-40 hours after a single HCG injection (10,000 IU IM) . The remaining parts of the dominant follicle transforms into Corpus luteum. It continues to grow during the luteal phase and produce significant amounts of hormones , particularly progesterone and to lesser extent estrogen and inhibin. Progesterone plays a vital role in making endometrial receptive to implantation of blastocyst and supportive of early pregnancy.

Aim of the work

The aim of this study is to assess the effect of adding HCG ovulation trigger in cases of polycystic ovarian syndrome undergoing ovulation induction by letrozole

PATIENTS

This is a randomized study that was conducted on 160 patients after obtaining approval from the Ethics committee of Faculty of Medicine of Alexandria University. The study sample were recruited from Shatby infertility clinic. **Inclusion criteria:**1. group is 20-35years.2. Any gravidity and parity.3. Patients with polycystic ovarian syndrome presented with an ovulation plus either hyperandrogenism or polycystic ovarian morphology.[14]4. married and seeking pregnancy**Exclusion criteria:**1. Comorbidities such as diabetes mellitus, thyroid diseases, hyperprolactinemia and other endocrinopathies.2. BMI > 35. 3. Uterine malformationsor other pathology such as myoma and adenomyosis. 4. Ovulation induction or hormonal treatment within the last three months. 5. other causes of infertility.

METHODS

Patients seen in clinic, who consented to the study, were subjected to the following sequense of steps: • Artificially induced menses using Duphaston 10mg three times per day for seven days. • Basal ultrasound scanning during menses to exclude any ovarian cyst or endometrial pathology. • Letrezole 2.5mg twice daily was given starting from day five to day ten.• Follicular scanning starting after end of treatment.• When follicular size > 14mm, patients were randomized blindly into two groups:Group A (80 patients) " timing only ", Group B (80 patients) that will receive HCG10.000 IU when follicular size ≥18 mm. **The main outcome measures:**• Number of cases responded by dominant follicles and number of follicles seen before randomization of patients into two groups (A) and (B). . ovulation diagnosed sonograghically •Serum progesterone level “P4” , estradiol level “E2” and E2/P4 ratio were measured at **group (B)** after eight days of HCG administration and in **group (A)** after seven days **Secondary outcomes:**• Clinical ongoing pregnancy.• Miscarriage rate.• Timing of menses in non-pregnant women to assess the length of luteal phase.

Results

A total of 80 cases of women were in each arm of the study. there were no significant difference in age, BMI, gravidity and parity. Although,ovulatory rate was higher with adding HCG but pregnancy and abortion rates were not statistically different from letrozole alone. Also our study founded that HCG has negative impact on the luteal phase length. This emphasizes that most of the cases don't need HCG as an ovulation trigger

Table (1):Comparison between the two studied groups according to number of dominant follicles and sonographic evidence of ovulation

Ovulation	Group A (n = 80)		Group B (n = 80)		c^2	P
	No.	%	No.	%		
Number of dominant follicles						
One	54	67.5	60	75.0	1.143	^{MC}p= 0.622
Two	21	26.3	16	20.0		
Three	5	6.3	4	5.0		
Sonographic evidence of ovulation						
Ovulated	42	52.5	62	77.5	10.989*	0.001*
Not ovulated	38	47.5	18	22.5		

Table (2) :Comparison between the two studied groups according to pregnancy rate.

Ongoing pregnancy	Group A (n = 80)		Group B (n = 80)		c^2	P
	No.	%	No.	%		
Negative	64	80.0	59	73.8	0.879	0.348
Positive	16	20.0	21	26.3		

Table (3) : Comparison between the two studied groups according to abortion rate.

	Group A (n = 80)		Group B (n = 80)		c^2	^{FE}p
	No.	%	No.	%		
Abortion						
Negative	76	95.0	75	93.8	0.118	1.000s
Positive	4	5.0	5	6.3		

Conclusion

Letrozole alone is a potent drug in ovulation induction in PCOS cases. Letrozole is a monofollicular producing drug so, low incidence of multiple pregnancy and ovarian hyperstimulation if given with HCG trigger. Ovulatory rate was significantly improved with HCG injection after ovarian stimulation by letrozole . Pregnancy rate and abortion rate weren't statistically different with adding HCG to letrozole in ovulation induction in PCOS cases as an ovulation trigger which empathize that not all the cases need adding HCG to letrozole.