

## **A Study on Clinical Response to Controlled Ovarian Hyperstimulation of In Vitro Fertilization and Embryo transfer according to the Size of Baseline Ovarian Cyst**

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**Objective** ; This study was performed to compare the clinical response to controlled ovarian hyperstimulation

(COH) of in vitro fertilization and embryo transfer(IVF-ET) according to the size of baseline ovarian cyst.

**Method** ; From February 1992 to March 1999, a retrospective analysis was done of 272 cases who

underwent COH using mid-luteal phase long protocol of gonadotropin-releasing hormone agonist

(GnRH-a) for IVF-ET. These cases were divided into four group; group 1(n=63) had cysts with mean diameters between 20.0 and 29.0mm on their baseline ultrasound on cycle day 3, group 2

(n=57, 30.0-49.0mm), group 3(n=68, >50.0mm) and control group(n=84). Cases were excluded

according to the following criteria; pure male factor infertility, the presence of only one ovary,

high CA-125 level and previous endometriosis.

**Results** ; There were no statistically significant differences between cases with baseline ovarian cyst <50.0 mm in diameter and control group in any of the parameters. However, cases with baseline ovarian cyst>50.0mm in mean diameter needed more amount of human menopausal gonadotropin(hMG),

showed significantly lower estradiol(E2) level, the number of follicle>15.0mm on the day of human chorionic gonadotropin(hCG) administration, the number of oocytes retrieved, the number of mature oocytes, and pregnancy rate compared with control group.

**Conclusion** ; This study suggests that cases with baseline ovarian cyst <50.0mm in diameter do not adversely

impact on IVF-ET outcome. However, cases with baseline ovarian cyst >50.0mm in diameter had adverse effects on various parameters. Therefore, to improve the outcome of IVF-ET in these

cases, ovarian cyst aspiration prior to initiating COH may be required.

Key wards; In vitro fertilization and embryo transfer(IVF-ET), Controlled ovarian hyperstimulation(COH), ovarian cyst

(controlled ovarian hyperstimulation, COH)

가

, (estradiol, E2), (luteinizing hormone, LH),  
(follicle stimulating hormone, FSH), clomiphene citrate (clomiphene  
citrate challenge test, CCCT) (gonadotropin-releasing hormone  
agonist: GnRH-a) (GnRH agonist stimulation test, GAST),

(in vitro fertilization and embryo transfer, IVF-ET)

가

.1

가

GnRH-a

10-29%

GnRH-a

.2.3

가

.2.3.4.5

.6.7.8

.9

GnRH-a

가

가

GnRH-a

2

3

가

가

가

.10

가

가

.11

GnRH-a

(Luteal phase long

protocol)

1)  
3 GnRH-a 1992 2 1999  
272

CA-125가  
GnRH-a  
20.0mm 20.0-29.0mm 63  
1 , 30.0-49.0mm 57 2 , 50.0mm 68 3  
30.0mm 84

2)  
GnRH-a  
GnRH-a  
21 GnRH-a leuprolide acetate(Lucrin,  
abbott Laboratories, France) 3 human  
menopausal gonadotropin (hMG; Merional, IBSA, Switzerland) 150-300IU

3)  
2 E2, LH, FSH hCG E2, LH, FSH

4)  
6.5MHz frequency transducer가 real-time transvaginal sector  
scanner(SonoAce, Medison, Korea) 3 hMG  
가 hMG 6 8  
hMG  
18.0mm , 16.0mm 가 2 , human  
chorionic gonadotropin(hCG; Choriomon, IBSA, Swizerland) 10,000IU

5)  
hCG 34-36  
demerol, valium , lidocaine  
2ml Dulbelcco's phosphate buffered  
saline(D-PBS)  
D-PBS  
가  
(immature), (mature), (postmature),  
(degenerative)

6) 3-5 , , 37 30  
 , 가 , 가 (1992)  
 criteria) , , tube (strict morphology  
 14ml conical tube 95%, 70%, 50% percoll  
 600G 20  
 2ml  
 300G 10 2  
 1ml 37 , 5% CO2  
 swim-up .

7) IVF media (Medicult, Copenhagen, Denmark) .  
 4 6 가 .  
 23-35 가 1 가 .  
 16-18 - -  
 (oocyte-cumulus-corona complex,OCCC) 2 (2  
 pronuclei, 2PN) 200 .  
 IVF  
 24-28 .

8) , 48 가 , 가 가  
 , 가 가  
 6 가 .

9) (Progesterone in oil; Progest, Samil  
 Pharma., Korea) 30mg 12 -HCG  
 , 10.0mIU/ml .

10)

mean ± standard deviation	,	Student
t-test	oneway ANOVA	,

P<0.05

1.

35.3 ± 4.8	1	34.2 ± 3.7 , 2	36.2 ± 4.7 , 3	35.3 ± 4.6 , 2
E2	1	21.2 ± 1.6(pg/ml), 2	19.3 ± 1.3(pg/ml), 3	18.4 ± 2.0(pg/ml) ,
LH	1	9.3 ± 0.6(mIU/ml), 2	11.2 ± 1.2(mIU/ml), 3	7.9 ± 0.8(mIU/ml), ,
FSH	1	8.4 ± 0.6(mIU/ml), 2	11.3 ± 1.5(mIU/ml), 3	13.6 ± 1.8(mIU/ml), 가 (Table 1).

Table 1. Comparison of clinical characteristics of each groups

	Group 1	Group 2	Group 3	Control group
No. of patients	63	57	68	84
Age of patients(yrs)	34.2 ± 3.7	36.2 ± 4.7	35.3 ± 4.6	35.3 ± 4.8
Basal E2(pg/ml)	21.2 ± 1.6	19.3 ± 1.3	21.3 ± 1.8	18.4 ± 2.0
LH(mIU/ml)	9.3 ± 0.6	11.2 ± 1.2	7.9 ± 0.8	8.2 ± 0.4
FSH(mIU/ml)	8.4 ± 0.6	11.3 ± 1.5	13.6 ± 1.8	9.8 ± 0.8

Note) Group 1: patients with simple cystic structure ,20.0 to 29.0mm  
 Group 2: patients with simple cystic structure ,30.0 to 49.0mm  
 Group 3: patients with simple cystic structure ,over 50.0mm  
 Values are means ± S.D.

2.

32.4 ± 5.9 , 가 , 3	hMG	1	22.5 ± 5.7 , 2	24.8 ± 6.9 ,
hMG	1	8.4 ± 1.2 , 2	7.8 ± 1.6 , 3	6.9 ± 1.7 ,
11.6 ± 1.3 , 2 , 3	14.2 ± 2.0	12.5 ± 1.1	12.3 ± 1.4	가 (P<0.05). hCG
4.8 ± 2.7 , 3	3.5 ± 1.8 ,	15.0mm	5.8 ± 1.8 , 3	1 , 2 , 3
5.5 ± 3.7 , 3	6.1 ± 2.8 ,	15.0mm	6.5 ± 2.6	1 , 5.8 ± 1.8 ,
hCG	E2	1	2543 ± 678(pg/ml), 2	2435 ± 768(pg/ml)
2234 ± 887(pg/ml) , 가 (P<0.001).	hCG	1	1764 ± 456(pg/ml)	LH
13.5 ± 3.4(mIU/ml), 2	11.8 ± 1.7(mIU/ml), 3	13.5 ± 1.7(mIU/ml), 1		

12.3 ± 1.7(mIU/ml) , 2 19.3 ± 7.9(mIU/ml), 22.4 ± 2.7(mIU/ml) 가 21.5 ± 8.4(mIU/ml), 가 18.9 ± 7.4(mIU/ml), 1 (Table 2).

Table 2. Comparison of ovarian response to controlled ovarian hyperstimulation among groups

	Group 1 (n=63)	Group 2 (n=57)	Group 3 (n=68)	Control group (n=84)
No. of ampules of hMG used	22.5 ± 5.7	24.8 ± 6.9	32.4 ± 5.9*	23.3 ± 6.5
Duration of hMG used(days)	8.4 ± 1.2	7.8 ± 1.6	6.9 ± 1.7	6.2 ± 0.8
Cycle day of hCG administration	11.6 ± 1.3	12.5 ± 1.1	14.2 ± 2.0*	12.3 ± 1.4
Response on the day of hCG administration				
No. of follicles>15mm	5.3 ± 2.7	4.8 ± 2.7	3.5 ± 1.8*	5.8 ± 1.8
No. of follicles<15mm	5.8 ± 1.8	5.5 ± 3.7	6.1 ± 2.8	6.5 ± 2.6
E2(pg/ml)	2543 ± 678	2435 ± 768	1764 ± 456**	2234 ± 887
LH(mIU/ml)	13.5 ± 3.4	11.8 ± 1.7	13.5 ± 1.7	12.3 ± 1.7
FSH(mIU/ml)	19.3 ± 7.9	21.5 ± 8.4	18.9 ± 7.4	22.4 ± 2.7

Note) Values are means ± S.D

\* : p < 0.05. compared with control group

\*\* : p < 0.001. compared with control group

3.

9.6 ± 1.7 , 1 , 2 10.5 ± 2.4 , 2 9.3 ± 2.8 , 3 6.4 ± 4.6 , 가 1 , 3 가 (P<0.001). 1 8.3 ± 3.5 , 2 7.3 ± 4.3 , 3 4.3 ± 2.5 , 8.4 ± 2.8 1 , 2 가 , 3 가 (P<0.001). 1 2.8 ± 2.0 , 2 2.1 ± 1.8 , 3 2.6 ± 1.1 , 2.4 ± 1.3 가 . 1 0.5 ± 0.6 , 2 0.7 ± 0.3 , 3 0.4 ± 0.2 , 1 3.8 ± 2.9 , 2 3.8 ± 3.7 , 3 4.1 ± 2.9 , 3.4 ± 2.8 가 . 1 33.6%(21/63), 2 30.4%(17/57), 3 27.5%(18/68), 32.5%(27/84) 1 , 2 가 , 가 (P<0.05)(Table 3).

Table 3. Comparison of clinical results of controlled ovarian hyperstimulation and pregnancy outcome among groups