



Antagonist Protocol versus Short Protocol in PCO

Wael Ahmed Ezzat Ammar

Fellow Obstetrics and Gynecology at El GALAA Teaching Hospital

Email: dr.waela3@gmail.com

Abstract: Aim: Here we try to compare antagonist protocol and short protocol in PCO. **Methods:** This is a retrospective study was done at El Galaa Assisted Reproductive Center Teaching Hospital from January 2015 till June 2025. In which 200 Females suffering from PCO divided into: Group (A) 100 cases of PCO females received Antagonist protocol, And Group (B) 100 cases of PCO females received short protocol. The 2 groups received the same starting HMG dose which is 150 IU. Comparing two groups was done regarding to number of days of stimulation, number of oocytes retrieved, number of M2 oocytes and pregnancy rate. **Results:** As regarding: Age of group A mean was 32.22 ± 1.5 year, and mean of age of group B was 32.34 ± 1.4 year, And P value was 0.698, So Age between both groups was statically insignificant as P value > 5% these because we take in our consideration that age of females in both groups should be between 30:35 years of both groups. As regarding BMI was in group A mean 32.99 ± 1.03 kg/m² and for group B mean BMI was 33.1 ± 1.4 Kg/m² where p was =0.63so p value > 5% so BMI was statically insignificant. As regarding days of stimulation Group A was 10.42 ± 1.75 days, while mean of group B was 10.78 ± 1.66 days, where P value was = 0.2 so it was statistically insignificant as p value > 5% While number of oocytes retrieved group A mean was 8.9 ± 2.9 oocytes, and group B mean was 8.7 ± 3.1 oocytes where P value equals 0.64 so > 5%, So statistically insignificant. As regarding number of oocytes retrieved group A mean was 6.5 ± 2.6 oocytes, while group B mean was 6.6 ± 2.4 oocytes where P value was 0.78 i.e. > 5%, So Number of oocytes retrieved was statistically insignificant. As regarding pregnancy rate of group A mean was $35\% \pm 0.4\%$, And group B mean was $34\% \pm 0.4\%$, P value equal 0.86 so > 5 %, This meaning pregnancy rate was statistically insignificant. **Conclusion:** In PCO females antagonist protocol when compared with short protocol showed non statically significant differences in number of days of stimulation, number of oocytes retrieved, number of M2 oocytes and pregnancy.

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Keywords: Antagonist Protocol; Short Protocol; PCO

1. Introduction:

We can define polycystic ovarian syndrome (PCO) as ovarian dysfunction and hyperandrogenism (1).

PCO is considered as the most common endocrinopathy in them in the females in the reproductive age (2).

Obesity can be found in about half of females with PCO. (3)

In PCO females there are lower clinical pregnancy rates in ICSI (4,5).

PCO Females are at high risk for miscarriage (4,6,7).

In PCO females there is decrease in overall live birth rates (5,8).

In maternal diabetes there were abnormal oocytes, with delayed maturation, smaller size, high apoptosis in granulosa cells, bad embryo outcome, delayed embryo development, growth restriction, amniotic defects and abnormal pregnancy outcome.in animal trials (9-14).

Diagnosis of PCO was according to Rotterdam criteria, by 2 of; oligo or anovulation, clinical or biochemical signs of hyperandrogenism and picture of PCO ovary by ultrasound (14).

When body mass index (BMI) increased this made changes in preovulatory follicular fluid by increasing insulin, triglycerides (TG) and androgen. This affects oocyte size. Treatment by Metformin makes their oocyte of normal size and function (15).

Antagonist protocol can be used ideally in female with PCO (16).

When we use a long, or antagonist or short protocol in female with PCO, there were no statistically significant differences in clinical pregnancy rate, live birth rate (17).

Aim of study:

Comparison between antagonist protocol versus short protocol in PCO females

2. Patient and methods:

This study is retrospective study was done in El Galaa Assisted Reproductive Center in El Galaa Teaching Hospital over 10 years from January 2015 till end of June of 2025.

In this study 200 females suffering from PCO underwent ICSI divided into 2 groups:

Group A: Antagonist protocol for 100 PCO female.

Group B: short protocol for 100 PCO female.

Diagnosis of PCO was according to Rotterdam criteria, by 2 of; oligo or anovulation, clinical or biochemical signs of hyperandrogenism and picture of PCO ovary by ultrasound. (14).

Inclusion criteria:

- Age: 30:35 years
- BMI: 30:35
- Diagnosed as PCO

Exclusion criteria:

- Age <30 or >35
- BMI <30 or >35
- Any other medical disorders
- Any uterine anomalies

3. Results:

Age in Group A: antagonist protocol in 100 Females with PCO the mean was 32.22 ± 1.5 year, And mean of age of group B was 32.34 ± 1.4 year, And P value was 0.698, So Age between both groups was statically insignificant as P value > 5% these because we take in our consideration that age of females in both groups should be between 30: 35 years of both groups (Figure 1).

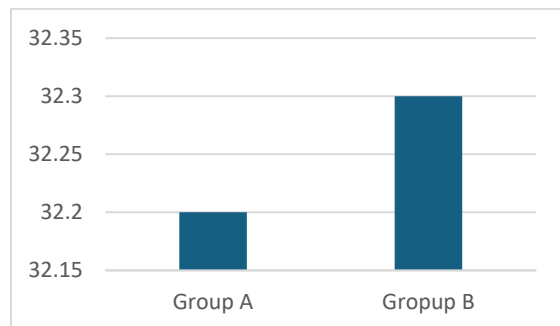
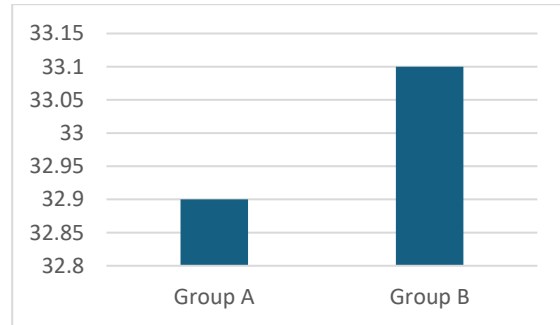


Figure (1): Age

BMI was in group A mean 32.99 ± 1.03 kg/m² and for group B mean BMI was 33.1 ± 1.4 Kg/m² where p was =0.63so p value > 5% so BMI was statically insignificant (Figure 2)



As regarding days of stimulation Group A was 10.42 ± 1.75 days, while Mean of group B was 10.78 ± 1.66 days, where P value was = 0.2 so it was statistically insignificant as p value > 5% (figure 3).

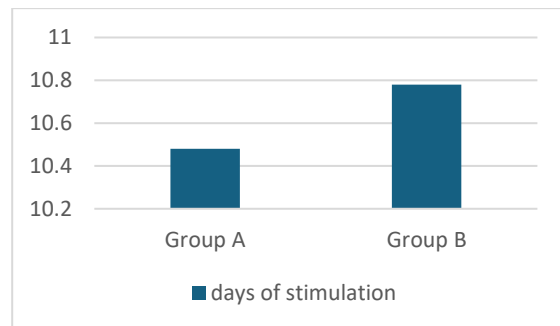


Figure (3): Days of stimulation

While number of oocytes retrieved group A mean was 8.9 ± 2.9 oocytes, And group B mean was 8.7 ± 3.1 oocytes where P value equals 0.64 so > 5%, So statistically insignificant (figure 4).

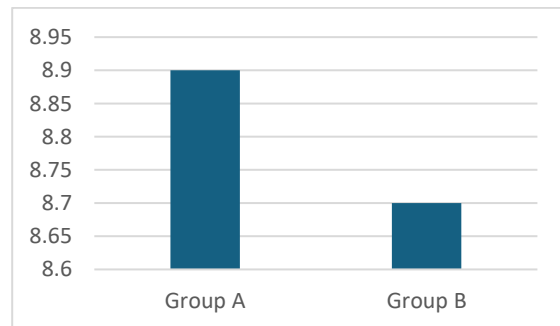


Figure (4): Number of oocytes

As regarding number of oocytes retrieved group A mean was 6.5 ± 2.6 oocytes, while group B mean was 6.6 ± 2.4 oocytes where P value was 0.78 i.e. > 5%, So Number of oocytes retrieved was statistically insignificant (figure 5).

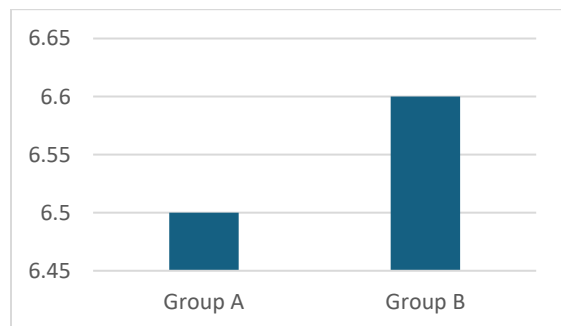


Figure (5): number of M2.

As regarding pregnancy rate of group A mean was $35\% \pm 0.4\%$, And group B mean was $34\% \pm 0.4\%$, P value equal 0.86 so $> 5\%$, This meaning pregnancy rate was statistically insignificant (figure 6).

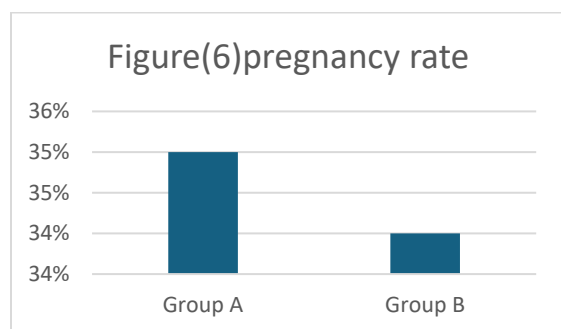


Figure 6. Pregnancy rate

Discussion:

This study was retrospective study done in El Galaa Assisted Reproductive Center in El Galaa Teaching Hospital from January 2015 till end of June 2025, In which 200 PCO females with ICSI cycles starting by same dose of 150 IU of the same drug of stimulation, Those PCO females divided in to, Group A 100 PCO female received antagonist protocol by starting by HMG from day 2 of menstrual cycle and starting the antagonist (Cetrotid 0.25mg) after 7 days. And (group B): 100 PCO female received short protocol where starting from day 2 of menstrual cycle by one ampoule Decapeptyl 0.1 mg then from 3rd day half ampoule of decapeptyl 0.1mg with stimulation drug. Both groups were on the same starting dose 150 IU of the same drug of stimulation.

In our results we found that Age and BMI, were statistically insignificant between both groups as we considering this in inclusion and exclusion criteria.

Age of group A mean was 32.22 ± 1.5 year, and mean of age of group B was 32.34 ± 1.4 year, And P value was 0.698, So Age between both groups was statically insignificant as P value $> 5\%$ these because we take in our consideration that age of females in both groups should be between 30:35 years of both

groups. As regarding BMI was in group A mean 32.99 ± 1.03 kg/m² and for group B mean BMI was 33.1 ± 1.4 Kg/m² where p was =0.63so p value $> 5\%$ so BMI was statically insignificant.

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As regarding number of oocytes retrieved group A mean was 6.5 ± 2.6 oocytes, while group B mean was 6.6 ± 2.4 oocytes where P value was 0.78 i.e. $> 5\%$, So Number of oocytes retrieved was statistically insignificant.

As regarding pregnancy rate of group A mean was $35\% \pm 0.4\%$, And group B mean was $34\% \pm 0.4\%$, P value equal 0.86 so $> 5\%$, This meaning pregnancy rate was statistically insignificant.

Our results agree with other studies done as, study done by Jungheim and Odibo, (17).

Our results were agreed by other studies done by Mohamed et al. (18)

While our results disagreed with results of Leizhen et al. (16) who found that short has higher live birth rate than antagonist may be due to fresh embryo transfer but ovarian hyperstimulation syndrome (OHSS) where higher with short protocol, We can discuss this differences in our results as we excluded the (OHSS) cases from start on other hand our cases all either on short protocol or antagonist protocol were triggered by 5000 IU HCG and underwent fresh embryo transfer. (16).

Our results disagreed with study done by Behery (19) who found that short protocol was better. (19).

Conclusion:

In PCO females antagonist protocol when compared with short protocol showed non statically significant differences in number of days of stimulation, number of oocytes retrieved, number of M2 oocytes and pregnancy.

GOTHI Review and Approval Certificate Number:
HG000089 (23/11/2022)

References

1. Azziz R, Carmina E, Dewailly D, et al;The Androgen Excess and PCOS Society criteria for the polycystic syndrome: The complete task force report. Fertil Steril. 2009; 91456-88.
2. Azziz R, Woods KS, Reyna R, et al: the prevalence and features of th PCO syndrome in unselected

- population. *J Chin Endocrinol Metab.* 2004; 89:2745-9.
3. Norman RJ, Noakes M, Wu R, et al: Improving reproductive performance in obese women with effective weight management. *Hum Reprod Update.*2004;10:207-80.
 4. Masheshwari A, Stofberg L, Bhattacharya S, et al: Effect of overweight and obesity on assisted reproductive technology-a systemic review. *Hum Reprod Update.*2007;13:433-44.
 5. Bellver J, Ayllon Y, Ferrando M, et al; Female obesity impairs in IVF outcome without affecting embryo quality. *Fertil Steril.* 93:447-54Doi:10.1016/J.fertnstert.2008.12.032.
 6. Jakubowicz DJ, Iuorno MJ, Jakubowicz S, et al: Effect of metformin on early pregnancy loss in the PCO syndrome. *J Clin Endocrinol Metab.* 2002;87:524-9.
 7. Wang JX, Davies MJ, Norman RJ, et al: PCO syndrome and the risk of spontaneous abortion following ART. *Hum Reprod.*2001;16:2606-9.
 8. Fedorcsak P, Dale PO, Storen R, et al: Impact of overweight and underweight on ART treatment. *Hum Reprod.* 2004; 19:2523-8.
 9. Colton SA, Piepper GM and Downs SM: Altered meiotic regulation in oocytes from diabetic mice. *Biol Reprod.* 2002;67 ;220-31.
 10. Diamond MP, Moley KH, Pellicer A, et al: Effect of streptozotocin and alloxan induced DM on mouse follicular and early embryo development. *J Reprod Fertil.* 1989; 86:1-10.
 11. Chang AS, Dale AN, Moley KH, et al: Maternal diabetes adversely affects preovulatory oocyte maturation, development, and granulosa cell apoptosis. *Endocrinology.* 2005; 146:2445-53.
 12. Moley KH, Vaughn WK, DeCherney AH, et al: Effect of diabetes mellitus on mouse pre-implantation embryo development. *J Reprod Fertil.* 1991; 93:325-32.
 13. Minge CE, Bennett BD, Norman RJ, et al: Peroxisome proliferator-activated receptor gamma agonist rosiglitazone reverses the adverse effects of diet-induced obesity on oocyte quality. *Endocrinology.*2008; 149:2646-56.
 14. Revised 2003 consensus on diagnostic criteria and long term health risks related to PCO. *Hum Reprod.* 2004; 19:41-7.
 15. Jungheim ES and Odibo AO: Fertility treatment in women with PCO syndrome: a decision analysis of different oral ovulation induction agents. *Fertil Steril.* 2010 doi:10.1016/J.fertnstert.2010.03.077.
 16. Leizhen Xia, Lifeng Tian, Jun Tan, et al: GnRH antagonist versus depot GnRH agonist protocol in PCO syndrome: analysis using propensity score matching. *Arch Med Sci,* 2025
 17. Yujia Ma and Jichun Tan: Optimal controlled ovarian stimulation protocol for polycystic ovary syndrome patients undergoing IN VITRO Fertilization/ Intracytoplasmic Sperm Injection: A systematic review and network meta analysis. *Fertility and Sterility J,* 122, (4), 2024.
 18. Mohamed, Mohamed Sameeh Kamal, Abdrbo, Hassan Ahmed and Farahat, Mohamed Mohamed: Classical antagonist protocol in comparison with agonist stop protocol in PCOS women undergoing ICSI trial: A randomized controlled trial, *Al-Azhar International Medical Journal:* vol.5: Iss2, Article8, 2024
 19. Behery, MA., Hasan, EA., Ali, EA., EA. and Eltabakh AA. Comparative study between agonist and antagonist protocols in PCOS patients undergoing ICSI: a cross-sectional study. *Middle East Fertility Society Journal.* 24:2, 2019.

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