Original Article

Role of Prognostic Factors in Success of Intrauterine Insemination (IUI) Procedure

Fazia Raza, Ghulam Murtaza, Roohi Gul and Shabana Gul

ABSTRACT

Objective: T**o** confirm-cum-identify important prognostic factors to improve outcome and provide a model to centers with lower success rates and newly developed centers.

Study Design: Descriptive study

Place and Duration of Study: This study was conducted at the Center for Reproductive Medicine, Rehman Medical Institute, Peshawar from January 2015 to January 2017.

Materials and Methods: One hundred and thirteen patients who were eligible for the inclusion criteria were included. In this study controlled ovarian stimulation was started giving HMG injections to patients following follicular tracking accordingly to get required size and number of follicles. After administration of IVF-C 10,000 IU twice insemination was performed at 36 and 44 hours with 0.5 ml volume of prepared semen sample via gradient or swim-up method.

Results: We found that >2 follicles was a fruitful prognostic factor (value 0.02) than 1-2 follicles. The semen preparation in culturing media produced better percentile 29.03% as compared to sperm wash media 12.19% in positive and negative case. While preparing semen sample through gradient method we got 28.57 % positive result as compared to swim-up method (P value 0.06). During this research we found that our pregnancy rate was 16.81 % pregnancies with take home baby rate of 63.15%.

Conclusion: In treating infertile couple, prognostic factors play a key role in improving IUI success rate.

Key Words: Intrauterine insemination, Controlled ovarian stimulation, Prognostic factors

Citation of articles: Raza F, Murtaza F, Gul R. Gul S. Role of Prognostic Factors in Success of intrauterine insemination (IUI) Procedurej Med Forum 2018;29(6):16-19.

INTRODUCTION

Initial procedure in the assisted reproductive technology (ART) is intrauterine insemination (IUI) along with controlled ovarian stimulation (COS) to cure patient with male factor infertility, unexplained infertility, endometriosis with one patent tube and anovulation [1, 2]. In this reproductive age, research studies have shown varying rates of infertility in developed 8%-32% and in developing countries it is more than 180 million[3-9].Many retrospective studies have given prognosis factors for IUI outcome such as, insemination count of motile sperm and progressive motility[10-15], duration and number of insemination[10,17-16], endometrium size and no of follicles at the time of LH surge[10,12,14], type and duration of infertility and the women age [12,13,18].

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Received: December, 2017; Accepted: February, 2018

MATERIALS AND METHODS

This descriptive study was performed between January 2015 to January 2017 at Centre for Reproductive Medicine (CRM), Rehman Medical Institute (RMI), Peshawar, Pakistan. 113 patients who were eligible for the inclusion criteria was included in the study. Permission to conduct the study was taken from the institutional Ethical committee. Data was collected by reviewing the charts of the patients .The inclusion criteria included patients with unexplained infertility, bilateral patent tubes, mild male factor subfertility and minimal to mild endometriosis. The exclusion criteria were patients with poor response which means no follicular growth, endometrial lining less than 6 mm, or more than 4 follicles or patients who developed ovarian hyper-stimulation syndrome. On the 2nd day of the cycle a baseline Transvaginal scan (TVS) was carried out. Stimulation was started on cycle day 2 using human menopausal gonadotropin (HMG) 75- IU IM daily. Ovarian-cum-endometrial response monitored via TVS on day 5, 7 and 10and when at least one dominant follicle of >1.7cm/17mm, then under the ultrasound guidance using Cook catheter (Shepherd) twice intrauterine inseminations were performed at 36 and 44 hours after the administration of 10,000 IU of human chorionic gonadotropin (HCG).If more than 4 mature

follicles developed, the cycle was cancelled and the couple was advised to avoid sexual intercourse in this cycle.

Most importantly, whole semen preparation was carried out maintaining positive pressure of andrology section. Semen collected was through masturbation, and processed performing swim up and density gradient methods using sperm wash (Invitro cell) and culturing media. Under aseptic conditions IUI was done with cook catheter with insemination volume of 0.5 ml under ultrasound guidance.

Following IUI patients were advised for 30 minutes rest and for luteal support cyclogest 400 mg per vaginal given for 14 days post IUI.A SBHCG was done after 14 days and if positive an obstetrical ultrasound was done two weeks later. Women were followed till delivery and the neonatal outcome was recorded. Two groups were made based on the success of treatment of IUI(positive SBHCG) and comparison was done in the following variables age, number and size of dominant follicles, endometrial size, gradient versus swim up method and culture media versus sperm wash media. For continuous variables mean and standard deviation was used and for categorical variable p value was calculated using chi-square test. Data was analysed using SPSS version 20.

RESULTS

The mean age of female patients was 27.05with SD of 4.14.Causes of infertility were anovulation in 35%,male factor in 20%,and endometriosis in 12% and unexplained infertility in 33%.Out of 113 patients SBHCG was positive in 19-cases(16.84 %). Clinical pregnancy rate was 16.84%.Out of 19 patients, 15.78 % of them had first trimester miscarriage and two patients had ectopic pregnancy10.52%. In this research we found that take home baby ratio was 63.15 % and continued pregnancies 10.52% with gender male61.52 and female 38.46 percentile. Out of 19 patient one had twin pregnancy (Figs. 1-2).

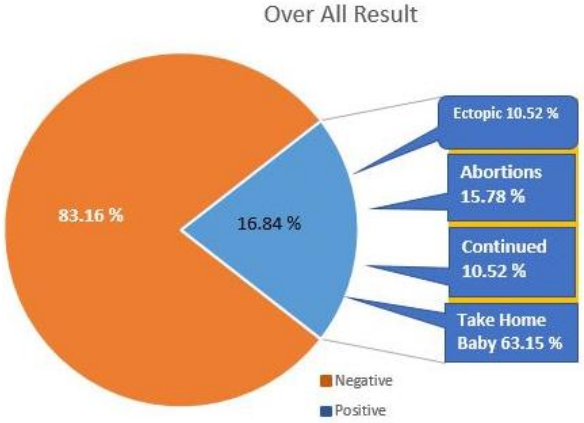

Figure No. 1: Comparison of outcome in positive cases

Maternal age, endometrial size and follicle size once it was 1.7 was not an important prognostic factor in our study (Table 1). We found that >2 follicles is a valuable prognostic factor for better pregnancy rate 79 % as compared to 1-2 follicles and had a safe twins percentile of 5.26. Semen preparation via gradient method was associated with higher pregnancy rate as compared to swim-up. Using culturing media, we got improved outcome against sperm wash media comparing to positive and negative (p. value 0.08) (Table 2)

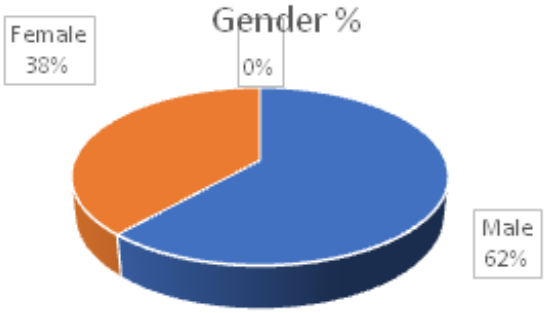

Figure No. 2: Comparison of gender outcome in positive cases

Table No.1: Average of parameters

Parameter	Mean±SD	P value
Age	27.05±4.14	0.703
Size 1	1.88±0.92	0.145
Endometrial size	0.77±0.24	0.128

Table No.2: Comparison of following parameters versus positive and negative cases

Parameter	Positive (n=19)	Negative (n=113)	P value
1-2 follicle(s)	4	5	0.02
3-4 follicles	15	58	
Gradient	10	35	0.06
Swim-up	9	78	
Culturing media	9	31	0.08
Sperm wash	10	82	

DISCUSSION

In our study an effort was made to determine the prognostic factors for IUI and ovulation induction. Our success rate was 16.81 %, for all cycles, which is comparable to other international studies.[19-23] In this study female age did not show any influence on IUI outcomes (p. value 0.73). However literature shows that advanced age decreases female fecundity [24] and this is due to reduced uterine receptivity and decreased oocytes quality[25].Even more advanced treatment options such as IVF and ICSI cannot completely overcome the negative impact of age[26].However, women's age was not significant in other study[27] which is comparable to our study.

For conception optimal endometrial thickness (>8mm) in essential. There are scarce data regarding the role of endometrial thickness and pattern on the success of

IUI[28] .In our study we found that it is not an important prognostic factor (Table 1).

In our study we found that >2 follicles is a valuable prognostic factor for better pregnancy rate 79 % as compared to 1-2 follicles with a safe with twins percentile of 5.26 which is in contrast to study done by Bages et al which said that three or four follicles instead of two follicles don't add any advantage in IUI outcome[29] (Table 1).

In most studies, the density gradient method has showed advantage in sperm recovery compared to swim-up method. It yields not only the highest number of motile sperm, mature sperm and better DNA quality but also reduces contamination[30].These findings were supported by our research in which use of gradient method for semen preparation and culturing media as compared to sperm wash media was associated with improved outcome (Table 2).

CONCLUSION

Presently, first line treatment offered to selected patients with less compromised parameters is IUI with controlled ovarian stimulation, which is easy, cheap and less invasive as compared to expensive IVF especially in low resource setup. Identifying definitive prognostic factors for predicting success will help in counselling patients regarding the modality of the treatment.

Acknowledgement: The authors are thankful for great assistance from staff in the center for reproductive medicine. We are especially grateful to our patients for participate in this study.

Author's Contribution:

Concept & Design of Study:	Fazia Raza
Drafting:	Ghulam Murtaza
Data Analysis:	Roohi Gul, Shabana Gul
Revisiting Critically:	Fazia Raza, Ghulam Murtaza
Final Approval of version:	Fazia Raza

Conflict of Interest: The study has no conflict of interest to declare by any author.

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