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Research Article

Prognostic Elements That Determine Having A Productive Intrauterine Insemination (IUI) For Iraqi Infertile Couples

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Abstract

Infertility is a medical health problem that has risen in the community recently. It is a sensitive topic to discuss in the Iraqi community due to culture issues, which makes finding the right treatment a hard mission. Infertile couples always face social stigma, which leads to depression and anxiety. Our aim of study is to examine the elements that could predict a successful IUI. Our project mainly performed in a private infertility clinic and partially in the public clinic for the period of time from September 2021 to May 2022. 200 Infertile couples have been chosen for the IUI treatments. We observe and study the clinical pregnancy outcomes rate to know what prognostic cases that would be successful. First, we found that media activated the sperm and our methods were significantly isolated the active sperm from the semen. Moreover, our clinical research has showed 40% of our participants had success in getting pregnant.

1. Introduction

Fertility rate has been lowered globally due to advancement in contraceptive manufacture. Culture norm and social habits are changing as women tend to prefer work over childbearing [1]. Infertility is defined as inability to have babies after one year from continues sexual intercourse [2]. Historically, the Intrauterine insemination (IUI) has been unraveled in the 20th century. IUI means use of artificial skills to elevate the likelihood to conceive a woman. In (IUI) a processed semen sample forced in the upper uterine area, sperm will pass the obstacles represented by barriers in the female reproductive tract. Although IUI is expensive, but it is effective and harmless therapy. The selected group of women for IUI should have normal tubes ovulation, while men can be advised to do IUI if they have immunological issues, and ejaculatory disorders. Progesterone is required for preparation of the uterus for embryo implantation. It is well known that any reduction in the concentration of serum progesterone during early stages of pregnancy results in abortion [3]. Thyroid diseases have proven clinically to cause infertility, so ladies who have shown thyroid gland imbalance was dismissed from the project [4]. Our research has positive impact on the community as we see the psychological problems that infertile couples have such as anxiety and depression [5]. Therefore, we worked hard as a team to better serve our patients, hoping to bring joy and happiness to our community.

2. Material and Methods

Infertile couples have been seen in the Al-Hussein infertility center and in our private clinic for the period of September 10-2021 to May 2022. We have chosen 200 cases (n=200) for a total of 500 women to be treated by IUI. Those ladies are suffering from infertility due to

cervical factors, anovulation and immunological factors. We used this method also if the male's sperm analysis has shown poor sperm movements, clotting and clumps. The standard IUI is accomplished as described by another group of researchers.

Informed consent

Oral and written consent was collected from all couples before the treatment.

2.1. Laboratory IUI Preparation

Semen analysis: Semen has been tested according to WHO recommendations [6], for all males included in the study. The semen test has been done one week prior to the operation and repeated on the IUI operation day to make sure it is suitable to go further with conception aid.

2.2. Hormonal Analysis

hormonal tests of blood has been performed to all couples. For male we tested testosterone, T3, T4. While, for female we tested LH, FSH, T3, T4, prolactin and progesterone [7–10]. For few cases of women who suffer previous incidence of abortion TORCH test has been performed to treat any reason that could kill the embryo [11, 12]. Moreover, internal exam has been performed to insure there is no tumor or mass in the cervix [13–15], and breast cancer exam has been done to verify that the breast has no clumps [16, 17].

2.3. Samples Collection and Swim Up Technique

Semen has been collected in special sterile container that has the name, the time of collecting the samples from each patient alone. Semen were left in the incubator to turn into liquid. Semen analysis has been done, and then the semen was centrifugated at 2000 rpm/ 10 min to separate the sperm from the seminal plasma. The semen were aspirated away to get rid of sever cramping, while the sediment that contain the sperm were washed away by suspending with sperm washing pre-warmed media Fertipro flushing media [18]. The mixture was centrifuged again, the supernatant was discarded and the sediment were resuspended in Fertipro gain media. The tubes were kept in the incubator at 37 C for 50-60 min. Later, the supernatant was collected with sterile pipette. Finally, the mixture transferred to Gynetic IUI catheter, and, it is ready to be used for IUI [19].

In the end, the processed sperms were transported by sterile catheter into the females, where a small catheter is placed through the cervical OS to deliver sperm directly into the uterus, thus bypassing the cervical barrier [20].

2.4. Statistical Analysis

GraphPad prism version 8 software for Windows, La Jolla California USA,www.graphpad.com, was performed in our project. Percentages compared to the expected results. Significant data symbolized by star as the following: $0.01 \leq$ *p <0.05; $0.001 \leq$**p <0.01; ***p <0.001.

3. Results

As we stated in Table 1, the sperm concentration has lowered significantly, as our IUI methods collect only live and active sperm. On the other hand, we have noticed that the sperm vitality has increased significantly. For sperm activity, we have followed the WHO classification in of the sperm activity by using ABCD system. A is given when the sperm are moving forward fast in a straight line. B means the sperm swim forward in a curved line. C refers to sperm that moves its tail only. D means immotile sperm.

Table 1: Semen Parameters Before and after Processing.

Parameter		Seminal fluid analysis	Sperm analysis after processing with gain media	***T* test value** Statistical analysis
Sperm concentration (x 10^6/ml)		45.7 ± 2	23.2 ± 1.7	S
Sperm vitality		60	80	S
Sperm activity (%)	Grade A	13 ± 2	20 ± 2	S
	Grade B	25 ± 1.5	30 ± 1.7	
	Grade C	18 ± 2	5 ± 1.5	
	Grade D	30 ± 1.1	7 ± 1.1	
Sperm clumps		10 or more	none	S
Morphologically normal sperm (%)		30	30	S
S means significant relationship between two factors, P=0.01 or higher				

However, Figure 1 is showing the number of successful cases in our research. As we see there is 80 cases pregnant (Pr) of successful cases out of 200 women participated in the study (40 %). By this we have 120 NPr Non pregnant cases (60 %).

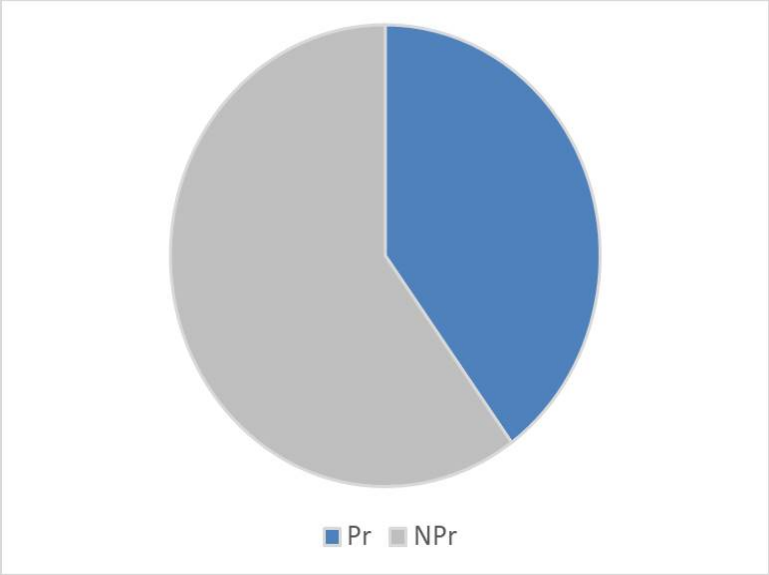

Figure 1: Number of pregnant women

Our findings have documented a significant relationship between the women age and the productive IUI rate Table 2.

Table 2: The role of age in having a successful IUI.

Infertile women No	10	23	44	63	76
Age period	19-20 y	21-225 y	26-30 y	31-37 y	38-45 y
Successful IUI rate	99 %	91 %	81 %	60 %	30 %
Unsuccessful IUI rate	1 %	8 %	19 %	40 %	70 %

4. Discussion

Sperm analysis were shown that the sperm concentration has lowered significantly. These results were expected as our methods collect the life and active sperm, while the dead and slow active sperm were discarded with centrifugation. Our methods was based on other groups of researchers with minor modification [21].

Sperm swim up methods were seen as a good method in separating the active motile sperm. Our results have agreed with other researchers who have used the same methods [22].

Figure 1 has showed our successful work as we have gotten 80 pregnant cases so far. These cases tell us that the barrier for the pregnancy is in the cervical area and by using IUI we have overcome this obstacle successfully. However, we have 120 cases have not been conceived, but our percentages is similar to several research that have been done worldwide [23].

Finally, we also have done hormonal analysis for all the participants, but we decided to publish them in a separate paper.

5. Conclusion

Media activated the sperm and our methods were significantly isolated the active sperm from the semen. Moreover, female age is a most significant factor affecting IUI success.

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