A FURTHER INDICATORS OF INTRAUTERINE INSEMINATION IN ADVANCED WOMEN AGE IS SOCIOECONOMIC STATUS AND RESOURCE CRUNCH.

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ABSTRACT:

Background: Advanced women age has emerged as a major public health concern. The medical works has consistently defined advanced age as 35 years and older. Intrauterine insemination was still an inexpensive, non-invasive, procedure that is more patient-friendly, less stressful, and extremely safe and efficient first-line therapeutic approach for certain patients. Most people attending public hospitals are from low-income families consider IVF treatment to be ridiculously expensive.

Aim of study: to assess the effectiveness of intrauterine insemination as an assisted conception methods for couples with non-male factor infertility and advanced women age in those cannot tolerate the high cost of ICSI due to low economic status or unavailability of specialized IVF centers.

Patients and methods: a retrospective cross-sectional study that included (152) infertile couples, the participants who were included in this study were divided into groups based on maternal age; group A (younger than 35 years old, group B (35 to 40 years old) and group C (older than 40 years old). controlled ovarian stimulation and ovulation induction was started at cycle day two and it was achieved mainly by two regimes: oral medications “clomiphene citrate or letrozole” and injectable gonadotrophins with or without oral medications.

Results: The mean female age was (31.45±6.3), mean duration of infertility (6.78±3.64) years and primary infertility was reported in (77.60%). positive pregnancy test was recorded in 23 of them (23.5%) in female younger than 35 years old in contrast to (14.3%) and (10.5%) for 35-40 and older age group respectively.

Conclusion: IUI is a low cost, simple, available and socially accepted procedure that have a respectable chance of having a live birth in infertile couple with advanced women age.

Kew words: intrauterine insemination, advanced women age, ovarian stimulation.

I. INTRODUCTION:

Infertility is defined as failure to attain a successful pregnancy after a twelve months period or more of regular, unprotected sexual relationship and is clarified at six months in women over the age of 35 (1) with global prevalence of infertility among couples at reproductive-aged ranges around 8 and 12 percent (2). Couples will be able to make informed decisions about their family planning and fertility treatments if there is an accurate estimate of pregnancy rates across different reproductive technologies (3).

Even after revolutionary advances in assisted reproduction, such as in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI), intrauterine insemination (IUI) was still an inexpensive, non-invasive, procedure that is more patient-friendly, less stressful, and extremely safe and efficient first-line therapeutic approach for certain patients (4, 5). Several factors have an effect on the results of ART procedures, including duration and type of infertility, results of seminal fluids, , but the age of the wife remains the most single independent factor influencing the outcomes (6). Advanced maternal age (AMA) has emerged as a major public health concern. The medical works has consistently defined AMA as 35 years and older (7, 8). Increasing maternal age reduces fertility potential by steady declining of ovarian reserve through the number of oocytes in
the ovary is gradually depleted, and increased aneuploidy by an age-related decline in oocyte quality (7, 9). The following are some clinical indications for IUI: unexplained infertility, cervical factor, mild-to-moderate male factor infertility, mild endometriosis, ovulatory dysfunction, immunological reasons and inability to conceive through vaginal intercourse due to psychological and/or organic reasons (5, 10, 11).

Still, the unfortunate truth is that most people attending public hospitals are from low-income families consider IVF treatment to be ridiculously expensive and tainted by a number of misconceptions, as well as a lack of knowledge about the treatments.

II. PATIENTS AND METHODS:

This is a retrospective study that included (152) infertile couples attend fertility unit at Safeer Al- Hussein Hospital, in Karbala Province in Middle Euphrates Area of Iraq who received cost-effective assisted conception treatment from March 2018 to February 2021. The participants who were included in this study were divided into groups based on maternal age: group A (younger than 35 years old, group B (35 to 40 years old) and group C (older than 40 years old). Couples with severe male factors precisely azoospermia and severe oligoasthenoteratozoospermia, bilateral fallopian tubes blockage and ovarian failure were excluded from the study.

A detailed history and thorough physical examination were performed for each couple prior to treatment imitation with at least two seminal fluid tests. After ensuring that the fallopian tubes, or at least one of them, are open by hysterosalpingogram; controlled ovarian stimulation and ovulation induction was started at cycle day two and it was achieved mainly by two regimes: oral medications “clomiphene citrate or letrozole”, and injectable gonadotrophins with or without oral medication.

Prior to sample processing, each patient was given “instructions for semen collection,” which included a period of abstinence, collection by masturbation into a wide mouth container, and collection of the entire sample. The centrifugation swim up technique is the most commonly used method of sperm preparation for the majority of IUI cycles. Before processing, the sample was kept in an incubator (37°C) for 30 to 45 minutes to allow the specimen to completely liquefy. To remove seminal plasma, the sample was gently mixed with HEPES-buffered sperm wash media in a 1:2 ratio and centrifuged for 10 minutes at 3000 rpm. The supernatant was aspirated without disturbing the pellet, and the pellet was resuspended in 0.3-0.5 mL of media. The supernatant was aspirated without disturbing the pellet from the top layers, which contain the highest percentage of motile sperms, after the incubation period which was used for insemination by specialized IUI catheter.

III. RESULTS:

A total of (152) infertile couples were included in this study. Table (1) shows the main dermo graphical characteristics of the study population including female and male age, type of infertility and its duration and the address, educational status and occupation of female partners. The mean female age was (31.4 ± 6.3) corresponding to (35.0 ± 7.3) for male. A little bit more than three quarters of couples had primary infertility (77.60%), in contrast to (22.40%) of couple experience previous conception with overall mean duration of infertility (6.78 ± 3.64) years. The majority of couples were lived in urban area (71.1%) and the rest (28.90%) were lived in rural zone. Most of females enrolled in this study was housewives (77.6%), a larger proportion of female had primary degree education (34.9%) followed by secondary degree (28.9%) and (19.7%) of them was illiterate, finally (16.40%) had college degree or higher education.

![Table (1): Demographic distribution of study population.](image-url)
In table (2); the seminal fluids parameters were tabulated; the mean semen volume was (2.67±1.18) ml, the mean sperm concentration in million per ml was (28.64± 18.88) with progressive motility percent reported (31.89±12.6) and (30.74±17.79) normal sperm morphology percent.

Table (2): Seminal fluid parameters of male partner

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean±SD</th>
</tr>
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<tbody>
<tr>
<td>Volume (ml)</td>
<td>2.67±1.18</td>
</tr>
<tr>
<td>Concentration (mil. /ml)</td>
<td>28.64±18.88</td>
</tr>
<tr>
<td>Progressive motility %</td>
<td>31.89±12.6</td>
</tr>
<tr>
<td>Morphology (normal %)</td>
<td>30.74±17.79</td>
</tr>
</tbody>
</table>

The pregnancy rate was calculated according to age group as shown in table (3). 98 women (64.47%) out of (152) total study population were younger than 35 years old with mean age (27.6±4.04) years, and positive pregnancy test was recorded in 23 of them (23.5%). Correspondingly; 35 women were between (35 to 40) years old which represent (23.02%) of all females and 5 couples of them documented to have positive pregnancy test (14.3%). Women older than 40 years old were 19 (12.5%) and positive pregnancy test was verified in 2 (10.5%) of them.

Table (3): Pregnancy rate according to female age group.

<table>
<thead>
<tr>
<th>Age group</th>
<th>N (%)</th>
<th>Mean ± SD</th>
<th>Pregnancy rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younger than 35 years old</td>
<td>98 (64.47%)</td>
<td>27.6±4.04</td>
<td>23 (23.5%)</td>
</tr>
<tr>
<td>35-40 years old</td>
<td>35 (23.02%)</td>
<td>36.8±1.46</td>
<td>5 (14.3%)</td>
</tr>
<tr>
<td>Older than 40 years</td>
<td>19 (12.5%)</td>
<td>41.3±1.01</td>
<td>2 (10.5%)</td>
</tr>
<tr>
<td>Total</td>
<td>30 (19.7%)</td>
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(P =.281); Pearson Chi-Square, 2.536

The pregnancy rate was also planned based on type of stimulation protocol used in the study as revealed in table (4). The most commonly ovarian stimulation regime was injectable gonadotrophins “with or without oral clomiphene citrate and or letrozole” which was reported in 120 (85.5%) of cases with positive pregnancy rate 28 (21.5%), on the other hand 6 (3.9%) of cases underwent IUI with natural or non-stimulated cycles with pregnancy rate achieved in 1 (16.7%). Oral clomiphene citrate and or letrozole was used as stimulation protocol in 16 (10.5%) women and positive pregnancy test was reported in 1 (6.3%).

Table (4): Pregnancy rate according to type of ovarian stimulation protocol performed in this study.

<table>
<thead>
<tr>
<th>Ovarian stimulation protocol</th>
<th>N (%)</th>
<th>Pregnancy rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-stimulated cycle</td>
<td>6 (3.9%)</td>
<td>1 (16.7%)</td>
</tr>
<tr>
<td>Oral medication</td>
<td>16 (10.5%)</td>
<td>1 (6.3%)</td>
</tr>
<tr>
<td>Injectable gonadotrophins</td>
<td>130 (85.5%)</td>
<td>28 (21.5%)</td>
</tr>
</tbody>
</table>

IV. DISCUSSION:

In spite of relatively low success rate compared to IVF and ICSI, IUI procedures continue to play an important role in the management of infertile couples because of their low cost, simplicity, availability and social acceptance (12). Inadequate health-care funding is a major issue in many developing countries including Iraq.
ARTs are commonly perceived as an expensive procedure by officials and the general public, and they are frequently excluded from public health-care funding (2). Unfortunately, the cost of ART procedures precisely ICSI is higher than some infertile couples can afford, which limits access to this treatment (13), leading to IUI becoming the most popular treatment option for infertility in resource-poor countries and loss of insurance handling (12) where IVF is either unavailable or prohibitively expensive for the majority of the population (15). A fact toward lower success rates was observed in women over the age of 35, which became more pronounced at the age of 40 and older. The overall pregnancy rate in current study was (19.7%); it was always similar to other researches (4, 16, 17) who concluded that the pregnancy rate ranged from 10% to 20%. In fact, the pregnancy rate in our study was declined to half in females of advanced maternal age linked to those younger than 35 years. Some authors recommend to refer an infertile female older than 40 years as soon as possible to IVF as first line treatment option as they concluded that women 40 years old had a 0.0% cumulative probability of continuing pregnancy after three cycles of IUI, related to younger aged women (28.2%), regardless of infertility history, usage of ovarian stimulation, or baseline semen parameters (4, 18, 19). it is well known that both oocytes number and quality decreased markedly with advancing female age resulted in decreased conception rate by different ART procedure and decreased embryo quality by increased aneuploidy (9, 20, 21) and also decline in uterine receptivity with age (22). In our study a positive pregnancy test was reported in 2 (10.5%) in females older than 40 years out of 19 couples and 5 (14.3%) out of 35 women between 35-40 years, these data are in agreement with other study conducted by Schorsch 2013; who reported a positive pregnancy test in (9.57%) in women older than 40 years and (8.66%) in women aged 35-40 years (21, 23). These findings indicate that intrauterine insemination is still permitted in patients aged 35 years and older. Possible explanation for this higher number of advanced female aged to perform IUI rather than ICSI is that most Iraqi families come from middle-income backgrounds, in this study most women were house wives (77.6%) and low educational level, only (16.40%) had college or higher education, and those with a high socio-economic status typically pursue private health facilities that we can't catch them, another point is that more than quatre (28.90%) was lived in rural areas with decrease facilities of diagnosis and treatments. All theses factors improve that the cost of ART procedure is a significant barrier between the increasing prevalence of infertility in the community and the service offered. Pregnancy rate in this study was higher in stimulated cycles with gonadotrophins whether used alone or in combination with oral CC or letrozole and these findings were consent with other studies by (4, 10, 11, 16, 23) who record a higher pregnancy rate in stimulated cycle by gonadotrophin. Similar to current results, authors revealed that CC with IUI is more successful than planned intercourse in natural cycles in ovulatory couples, nevertheless; ovarian stimulation with gonadotrophins is noted to be preferable to CC. (24-26).

In conclusion, while some patients have a clear indication for IVF, many do not. Beside its low fee, easiness, availability and social acceptance IUI procedure may have a respectable chance of having a live birth in infertile couple with advanced maternal age while avoiding the increased financial costs of IVF treatment.

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