How to Make Assisted Reproductive Technologies (ART) Affordable in Bosnia and Herzegovina: Experience After the First 105 Cycles

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Objective: Evaluation of the results after the first 105 cycles in private IVF centres in Bosnia and Herzegovina. Study design: Retrospective analysis of one hundred and five infertile couples who underwent IVF procedures. Results: The mean age of women who underwent IVF/ICSI was 34.1±5.1. The male factor was the cause of infertility in 50 (47.6%), tubal factor in 24 (22.2%), idiopathic infertility in 14 (13.3%), advanced age in 14 (13.3%) and PCOS in 4 (3.8%) infertile couples. The average number of retrieved oocyte was 7.84±5.30. In 96.2% cycles ICSI was performed and in 3.8% IVF/ICSI. The average number of transferred embryos per cycle was 2.49±0.9. The pregnancy rate per aspiration was 26.7%. The clinical pregnancy rate per transfer was 26.3%. The percentage of live births per transfer to date was 13.1 % and 7 of them are still pregnant. In the entire group of pregnant women 40% had twin pregnancies, 1 of them had an ectopic pregnancy (1.01%) and 4 (4.04%) had spontaneous abortions. Conclusions: The pregnancy and delivery rates are not satisfactory. The twin pregnancy rate is higher than is acceptable. Low-cost hormonal stimulation, natural cycles and freezing of embryos could be a possible way to make IVF affordable to a larger number of infertile couples. Key words: Assisted Reproductive Technologies, IVF, Bosnia and Herzegovina.

1. INTRODUCTION

IVF and related assisted reproductive technologies (ART) offer great hope to infertile couples all over the world. In Europe 10 to 12 percent of the global reproductive age population have experienced fertility problems. Even when countries possess sophisticated ART expertise, few provide the optimal number of cycles in fertility. Some Scandinavian countries and the Netherlands achieve 50 per cent, the UK and other parts of Europe achieve about a third (1).

Modern European society after more than thirty years of implementation of ART now has problems such as a advanced age, smoking, obesity, sexually transmitted diseases and environmental factors. Otherwise, the limitations for couples in Western Europe are the various regulations which have encouraged couples to cross borders for treatment in other countries (2).

Bosnia and Herzegovina (B&H) is geographically located in Europe, but the specific circumstances, such as the war and the bad economic situation have led to the fact that we cannot be included in the community of European countries in the context of problems related to treatment of infertile couples.

The war in B&H severely impacted the issue of infertility in two ways. First, through the significant biological loss that occurred and second, by the way it impacted the generations that are currently in their reproductive years. The generations currently of reproductive age were in their adolescent years during the war - the stage of life when the reproductive issues are first discovered. During the war, as well as in the years immediately thereafter, the majority of affected couples did not rate the issue of infertility as highly important. As a result, many of those couples missed the age when the proper diagnosis and treatment could have been established.

In addition, we do not belong to the group of typical “developing countries” where infertility problems are different and consequently the treatment of infertility requires a different approach. Infertility in developing countries is compounded by a combination of factors leading to secondary infertility, including poor health care provision, unsafe abortions, female genital mutilation, but above all by a greater prevalence of inadequately treated infections affecting the reproductive organs of both men and women (3, 4).
The treatment of infertility was based on the unsuccessful efforts of public hospitals with various limitations in terms of equipment and personnel. Couples from our country went to other surrounding countries which increased the costs of treatment. ART is still not covered by health insurance.

In order to make ART affordable for our patients we have organized an IVF centre like other modern centres in Europe. After the first 105 cycles we conducted this study aimed at evaluating the results and according these results to make protocols which are affordable for treatment of infertile couples in our specific conditions.

2. PATIENTS AND METHODS

One hundred and five (105) cycles were undertaken at the Women’s Health Centre in Tuzla, Bosnia and Herzegovina. The mean age was 34.05±5.11. 55.24% of women were younger than 35, 18.09% were in the group 35-37 years, 13.37% were 38-40 and 13.37% over 40. The male factor was the cause of infertility in 50 (47.62%), tubal factor in 24 (22.16%), unexplained infertility in 14 (13.33%), advanced age in 14 (13.33%) and PCOS in 4 (3.81%) (Figure 1).

For ovarian induction we used the standard long protocol. Down regulation was performed by analogues (daily usage). The initial dose of gonadotrophins was determined according to FSH levels, age and BMI. Dose alterations were performed on 7th day of stimulation and the following days according to sonograph findings. Ovulation was induced by an intramuscular injection of 10,000 IU hCG. Oocyte pick up (OPU) was performed 34–36 hours after hCG injection. On the same day as oocyte retrieval each patient began daily vaginal supplementation with progesterone. We do not use freezing because of the absence of legal regulations.

3. RESULTS

In 88.57% cycles ICSI was performed, TESA in 7.62% and 3.80 % cycles were performed as IVF/ICSI. The total number of oocyte was 824. The average number of transferred embryos was 2.49±0.90. The clinical pregnancy rate per cycle was 22.86%. The rate of positive B-hCG per transfer was 26.26% and the clinical pregnancy rate per transfer was 24.24%. The percentage of live births per transfer so far is 17.17%. In this group there were 41.17% twins. We did not have triplets. The miscarriage rate was 25 % (4) and 1 ectopic pregnancy (4.16%). The cancelation rate in the whole group was 0.95% (Table 1).

4. DISCUSSION

The pregnancy (clinical pregnancy rate 22.8%) and delivery rate (17.17%) is not satisfactory, but if we compare them with the data from other surrounding countries, they are similar (5). This is specially related to the countries of the ex Yugoslavia (Croatia, Macedonia) regarding the similar economical and political changes which happened over the last twenty years.

When we analyzed the causes of infertility in our patients, the “male factor” was the reason for treatment in almost of half the cases. The incidence of male infertility is somewhat higher than the incidence published in literature (6). This group of patients is small and is not representative for the whole population of the country. We could talk about the possible influence of the war and the specific circumstances after the war, although this hypothesis could not be established. Similar data about the influence of war in the Middle East and male infertility has already been published (7). The incidence of the “tubal factor” as a cause of infertility was similar as in other European countries which confirms our opinion that we should not be classified in the group of “developing countries” where the incidence of the tubal factor is higher and in correlation with a higher incidence of sexually transmitted diseases and other genital infections (4). “Unexplained infertility” was present in similar numbers as in other surrounding countries (8).

Using the long protocol 824 oocytes were aspirated or 7.85 oocytes per woman. The average number of transferred embryos was 2.49. The incidence of multiple pregnancy was 41.17% which is higher than the multiple pregnancy rate in the report by ICMART (5). The possible explanation could be that the largest number of women in this group was younger than 35. However,
the perinatal outcome of these multiple pregnancies was good (one late premature labour). In one case of twin pregnancy one foetus had anencephaly which was diagnosed at 13 weeks gestation. The other foetus was normal and the pregnancy was continued and resulted in labour at term. In one child agenesis of one kidney was diagnosed accidentally. The literature has also shown a larger number of various anomalies in children after in vitro fertilization (9, 10), but we are not sure that these anomalies can be linked with IVF alone.

Since we do not use freezing of embryos (absent law regulations) a certain number of embryos were discarded. Therefore we should modify the stimulation protocol and in patients where we expect a good response use “mild ovulation protocols”. The natural cycles are also a modality. This modification could influence the pregnancy rate, but may lower the cost of treatment. This approach leaves us the possibility of repeating the cycles and in this way give more opportunities for pregnancy. These natural cycles and “mild stimulation” have also been suggested by other authors who work in similar situations (11).

The number of miscarriages in the group of pregnant women (25%) was higher than in other reports (12, 13). Most of them was in the group older than 35 years, which is understandable, because the number of miscarriages is higher in this age group in spontaneous pregnancies too.

One ectopic pregnancy was diagnosed (4.16%) which is the expected rate of ectopic pregnancy after IVF. The high percentage of ICSI (88.87%) is not excusable, but could be explained by the high incidence of „male factor“. The lower number of oocyte per patient and advanced age where the reasons which determined the choice of fertilization method. In fact, we tried to avoid the possible absence of fertilization by classical IVF by endeavouring to take as “much as possible” from one cycle exclusively for economical reasons.

5. CONCLUSION

These are the first data about the ART status in Bosnia and Herzegovina. The results are not satisfactory, so we need to improve the pregnancy and delivery rate in the future. Modification of the ovarian stimulation protocol to low-cost hormonal stimulation can provide for repetition of cycles if they fail to achieve pregnancy in the first cycle. Natural cycles are also a low-cost modality. Freezing is the method of choice which can also help some couples achieve pregnancy after cycles with standard stimulation and a larger number of embryos but we need to wait for legal regulation.

REFERENCES