

ORIGINAL RESEARCH ARTICLE

Assisted Reproductive Technology in Western Algeria

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Abstract

Infertility is a major public health problem that Assisted reproductive technology (ART) helps remedying, allowing infertile couples realizing their parental project. In Algeria, the infertility rate is about 15%. Thereupon, several ART national centers have emerged. The aim of this study is to evaluate the ART activities, provide quantified data to understand the ART practice in western Algeria and compare our results abroad. We conducted a retrospective study on 1930 women treated for an ART at the EL MAWLOUD fertility center in Oran from January 1, 2019 to December 31, 2020. Our study showed the patients' average age as 33.42 and the ICSI as the commonest ART technique in our center with 90% frequency. The pregnancy rate equals 26.59% by insemination in IUI, and 41.25 % by puncture in IVF and ICSI, i.e. an average success rate similar in Europe and USA. This study elucidates the use of ART techniques (2019-2020) in western Algeria. They are satisfactory in our region compared to international data in the literature. However, ART remains embryonic in Algeria, regarding mainly the exorbitant prices of these techniques and the non-reimbursement of this act by the National Social Security Fund, which handicaps couples with medium and low incomes. (*Afr J Reprod Health* 2022; 26[10]: 38-43).

Keywords: Infertility, ART, Oran, assessment, pregnancy rate

Résumé

L'infertilité est un problème majeur de santé publique auquel la Procréation Assistée (AMP) contribue à remédier, permettant aux couples infertiles de réaliser leur projet parental. En Algérie, le taux d'infertilité est d'environ 15 %. Dès lors, plusieurs centres nationaux d'ART ont vu le jour. Le but de cette étude est d'évaluer les activités d'ART, de fournir des données quantifiées pour comprendre la pratique de l'ART dans l'Ouest algérien et de comparer nos résultats à l'étranger. Nous avons mené une étude rétrospective sur 1930 femmes traitées pour une PMA au centre de fertilité EL MAWLOUD à Oran du 1er janvier 2019 au 31 décembre 2020. Notre étude a montré que l'âge moyen des patientes était de 33,42 ans et l'ICSI comme la technique de PMA la plus courante dans notre centre avec une fréquence de 90 %. Le taux de grossesse s'élève à 26,59 % par insémination en IUI, et à 41,25 % par ponction en FIV et ICSI, soit un taux de réussite moyen similaire en Europe et aux USA. Cette étude élucide l'utilisation des techniques d'ART (2019-2020) dans l'ouest de l'Algérie. Elles sont satisfaisantes dans notre région par rapport aux données internationales de la littérature. Cependant, l'ART reste embryonnaire en Algérie, concernant principalement les prix exorbitants de ces techniques et le non-remboursement de cet acte par la Caisse Nationale de Sécurité Sociale, qui handicape les couples à revenus moyens et faibles. (*Afr J Reprod Health* 2022; 26[10]: 38-43).

Mots-clés: Infertilité, AMP, Oran, évaluation, taux de grossesse

Introduction

Infertility has been considered by WHO for several years as a disease in its own right¹. It concerns one in six couples. One in ten couples will use Assisted Reproductive technology (ART)². Assisted Reproductive technology (ART) itself includes all clinical and biological practices allowing procreation outside the natural process, i.e., techniques involving the manipulation of gametes

such as intrauterine insemination and classical in vitro fertilization or associated with a microinjection³. More than six million children are born in the world thanks to ART and approximately 200,000 children are born each year in the world thanks to these techniques^{4,5}.

In Algeria, infertility affects about 15% of couples; the Ministry of Health quantifies this rate at 300,000 infertile couples. They suffer from this problem more because of the lack of targeted

information but also the delay that sometimes takes years to have a diagnosis made^{6,7}. More than 60,000 Algerian babies have been born thanks to ART treatments offered by a dozen clinics located across the country⁸. However, there is unfortunately a great lack of data and studies on ART practices in Algeria. In this context, we carried out a study in the aim of evaluating the activities of ART, providing quantified data to have an idea on the practice of these techniques in the Algerian West, and comparing our results with those of the other countries of the world.

Methods

In order to meet the objectives set, we carried out a retrospective study on 1930 women treated for ART at the EL MAWLOUD fertility center in Oran during the period from January 1, 2019 to December 31, 2020. All female patients who consulted at the center to undertake a first cycle of Intrauterine Insemination (IUI), In Vitro Fertilization (IVF) or Intracytoplasmic Sperm Injection (ICSI) were included in our study. The data collection was made possible through exploration of the annual activity reports of ART of the EL MAWLOUD center. These reports allowed us to determine the distribution of the following variables in the studied sample:

Age of patients, stimulation cycles performed and canceled per year, number of pregnancies obtained, number of live births, number of pregnancies and multiple births, number and fate of ovarian hyper stimulation observed, number and fate of gametes and frozen embryos.

The SPSS 20.0 software (Statistical Package for the Social Sciences, IBM Corporation; Chicago, IL, August 2011) for Windows allowed us to make a descriptive analysis of each variable by averaging with standard deviation, frequency and percentage.

Results

Sample characteristics

In the present study, we have explored the results of 1930 female patients treated at the level of the el Mawloud center during the last two years. The center received 1100 female patients during the year 2019 and 830 patients during the year 2020.

Age of female patients

During our study, the average age of female patients was 33.42 years with an increase from year to year;

it went from 33.3 years in 2019 to 34.2 years in 2020. The most represented age group was that of 18 to 34 years old, 55.36% (Figure 1), it is worth noting that nearly 45 % of our patients were aged 35 and over.

Activity report of ART techniques

The results of ART practice, over the 02 years of activity from 2019 to 2020 reveal that out of the 1930 female patients consulting at the center, 1774 stimulation cycles were carried out and distributed as follows (Figure 2):

- 94 (5.29%) were programmed for IUI
- 91 (5.12%) were programmed for IVF
- 1589 (89.57%) were programmed for ICSI

While 156 stimulation cycles were canceled.

The results of these practices in terms of pregnancy obtained per stimulation cycle performed are shown in Table 1.

Multiple pregnancies

The rate of multiple pregnancies obtained during the period 2019-2020 is 4 % for twin pregnancies and 0.46% for triplet pregnancies:

2019: 12 (3.04%) twin pregnancies.

2020: 16 twin pregnancies (4.96%) et 03 triplet pregnancies (0.92%).

Ovarian hyperstimulation syndrome (OHSS)

The average incidence of OHSS during the period from 2019 to 2020 was 1.53%:

2019: 11 hyper stimulations were observed (1%); the cycle was canceled in 10 of them, while the 11th was in an early pregnancy.

2020: 15 hyper stimulations (1.80%) were brought under control in time by canceling the cycle.

Fate of the gametes and embryos collected

The number and fate of gametes and embryos collected in the center are shown in Table 2. In 2019, the number of couples affected by sperm freezing were 69 couples, while in 2020 it was 82 couples.

Discussion

Because of the COVID-19 pandemic, which affected the whole world and ultimately caused the center to close its doors for a period of three months, the number of patients decreased by 19.17 % in 2020

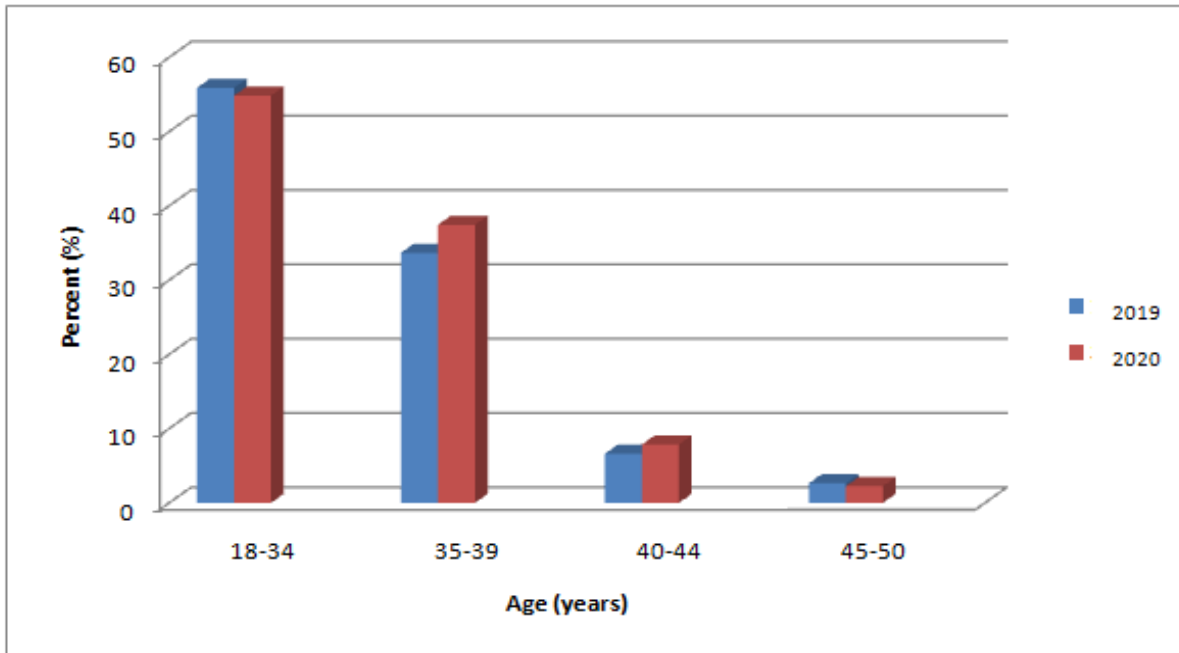


Figure 1: Distribution of patients according to age

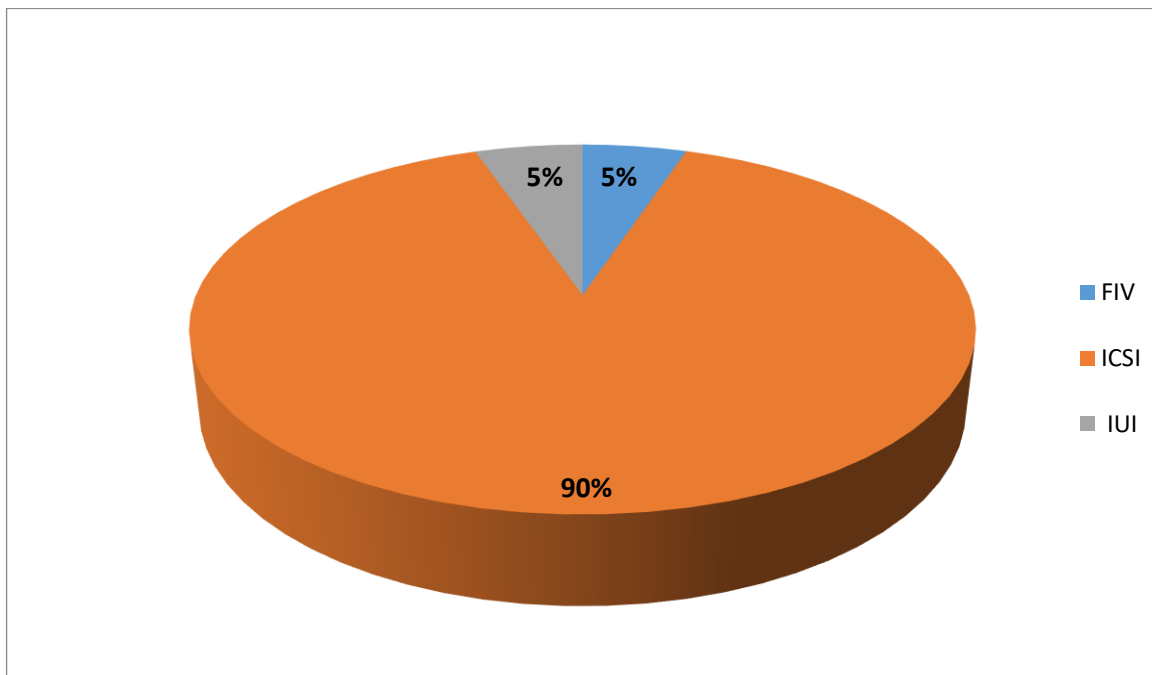


Figure 2: Distribution of patients according to the ART technique used

compared to 2019. The average age calculated according to the distribution by age group was 33,42 years with an increase from year to year, (it went from 33.3 years in 2019 to 34.2 years in 2020). These averages of age correspond to those published in the

world report for the year 2003 by the International Committee for the Supervision of ART techniques, which estimates that the international average age of patients treated in ART centers is 34 years old⁹. This result is also close to that communicated in a

Table 1: Results of the different ART techniques in the belly during the period 2019-2020

Year	2019			2020			Total		
	IUI	IVF	ICSI	IUI	IVF	ICSI	IUI	IVF	ICSI
Stimulation cycle performed	73	65	873	21	26	716	94	91	1589
Number of pregnancies obtained	17	378		08	315		25	693	
Pregnancy rate achieved (%)	23.28	40.29		38.09	42.45		26.59	41.25	
Number of Live births	10	133		03	147		13	280	
Live births rate (%)	13.69	14.17		14.28	19.81		13.82	16.66	

Table 2: Number and fate of Gametes / Embryos collected in the center

	2019		2020	
	Oocytes	Embryos	Oocytes	Embryos
Collected	10730	10014	7582	6736
Transferred	/	8560	/	5091
Frozen	18	109	35	82
Destroyed	698	1345	811	1563

Tunisian study which found that the average age of patients treated at the level of ART centers in the country was 32.4 years with extremes of 20 to 48 years¹⁰. The results published by Merviel¹¹, which found a practically linear and inversely proportional relationship between age and the success rates of ART techniques. Almost half of the patients were over 35 years old (49%), rates high compared to those reported in the literature. This delay by couples before resorting to ART may be due to the exorbitant prices of these techniques in the private sector and their non-reimbursement by the social security fund, as well as the lack of information and awareness of these techniques;

Indeed, the average number of punctures performed by ART centers in France far exceeds the number of punctures performed in Algerian centers: 145,000 attempts were made in 2015 through 191 active ART centers in France¹² against an unknown Algerian figure given the absence of a national register through a very limited number of centers (around ten centers).

We note that the technique most used in our sample was ICSI; this result corroborates that reported by FIVNAT¹³ where the rate of punctures performed for ICSI exceeds that performed for IVF (54% ICSI and 46% IVF). In our study we had 90% ICSI versus 5% IVF. For classical IVF, it was performed mainly in cases of isolated female infertility.

The total percentage of ICSI in our sample is higher than that reported by FIVNAT, which is probably due to the predominance of male infertility

in our region, as this technique is mainly of male indication.

This can also be explained by our socio-cultural context¹⁴, which means that when the man is confronted with a fertility problem, he is less reluctant to seek care than when the problem concerns the woman. IUI was applied in only 5% of the female patients in our sample. While this practice represents 37% of ART attempts in France, with around 54,000 attempts in 2015 according to the Biomedicine Agency¹². IUI is considered first-line in the case of unexplained infertility or in women with abnormalities of the cervix or sperm-impermeable cervical mucus, and in men with reduced semen quality or problems with ejaculation or erection.

The average success rate in IUI was 26.59% in our sample. These results are higher than international data: in France, for example, the pregnancy rate in IUI was 12.35% during the period from 2007 to 2010 according to the Biomedicine Agency¹⁵. While it is 41.25 % between IVF and ICSI, expressed in pregnancy by puncture. This rate is equivalent to that of Germany in 2010¹⁶. In addition, the rate of multiple pregnancies obtained during the period 2019-2020 is 4% for twin pregnancies and 0.46 % for triplet pregnancies. However, the results obtained always remain below those obtained throughout the world:

- In Spain for example, the rate of twin pregnancies and triplets obtained for the period 2002-2004 is estimated at 28.5% and 3.1% respectively¹⁷.
- In France, the rates recorded are 23.3% and 1% respectively for twin and triplet pregnancies¹⁸.

The average incidence of OHSS during the period from 2019 to 2020 was 1.40%, satisfactory result compared to those displayed in certain studies and which varied from 1 to 10% of the cycles of fertilization in vitro¹⁹. This result is explained by Instruction N° 300 establishing good clinical practices and the Biological ART of the Ministry of Health, which requires that the number of embryos transferred be discussed jointly between the couple, the clinician and the biologist. This number will depend on the appearance of the embryos, the age of the patient and his journey. However, the instruction has limited the number of embryos to three²⁰.

Conclusion

This study provides valuable information on the use of ART techniques during the period 2019-2020 in western Algeria. During the last two years, 1930 patients were taken care of at the center and 718 pregnancies were obtained (all techniques combined), i.e. an average pregnancy rate of 40.47% per attempt. This rate is certainly lower than the average fertility rate for young women but represents a significant chance of procreation for an infertile couple. The results of our study show that the success rates of ART techniques in our region are satisfactory compared to international data in the literature. However, progress is still expected in ART in Algeria, especially with regard to the exorbitant prices of these techniques and the non-repayment of this act by the National Social Security Fund, which constitutes a real handicap for couples with medium and low incomes. This is why we recommend the repayment of a number of ART act by the National Social Security Fund or the equipment of ART public unit with equipment necessary for IVF and ICSI practices, in order to allow middle- or even low-income couples to benefit from these techniques.

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