Distribution of Infertility Factors among Infertile Couples in Yemen

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Abstract

Background: Infertility is a global health issue and determines as a one of the most prevalent health disorders among young adult couples. It is well known that 50-80 million people are facing the problem of getting an integrated family. In the last thirty years the causes of infertility are varied from one population to another.

Objectives: To evaluate the distribution of infertility causes in patients attending Allow *In Vitro* Fertilization (IVF) center for infertility treatment.

Patients and methods: This study is a retrospective study. Data of 2622 infertile couples for a 5 years (from September 2007 to September 2012) period was derived from Allow IVF center. Results: the male factor infertility was 29.90% (1281/2622) was common versus female factor of infertility which was 24.37%. The combined infertility has been found in 34.25% of population. The isolated tubal infertility factor was documented in 3.70% (97/2622). The rate of unexplained infertility was observed in 11.48% of the population.

Conclusion: In summary, male factor infertility and anovulation, in the last thirty years, are still the driving causes of infertility problem in our population. The seminal fluid infection and sperm agglutination were the common male infertility subdivision causes in separate and combined infertility.

Keywords: Causes of infertility; Oligo/ovulatory; Sperm agglutination

Introduction

Infertility is a global health issue. Childbearing and raising of children are extremely important events in every human's life and are strongly associated with the ultimate goals of completeness, happiness and family integration [1]. Infertility defines as inability to conceive after 1 year with regular intercourse and without any contraceptives [1]. Infertility affects about 10-15% of reproductive-age couples, about half the causes of infertility are female related and approximately 40% of the cases are caused by anovulation, mostly in Polycystic Ovarian (PCO) women, in Taiwan [2-4]. Globally, and according to recent studies by the World Health Organization, approximately 8-10% of couples are facing some kind of infertility problem [5]. This means that 50-80 million people are facing the problem of getting an integrated family.

In case of infertility investigation due to unsuccessful pregnancy in the first 1-2 years of unprotected intercourse, a certain cases needed to be investigated as early as possible. These cases include amenorrhea, oligomenorrhea, pelvic inflammatory diseases and hormonal disorders. The pre-married fertility check-up is recommended in our IVF center policy [2].

The causes of infertility could be classified into three categories: male infertility, anovulation and tubal infertility [6]. If the investigation of these three major causes will be reviled as normal, the diagnosis will be unexplained infertility. The distribution of percentage of the above mentioned causes of infertility is hugely varied from one study population and/or country to another. So the aim of the present work was to evaluate, in a respective miner, the causes of infertility in patients who were attended private IVF Center for infertility treatment.

Patients and Methods

The study population is consisted of 2622 infertile couples that attended Allow IVF center which is a private specialized center for infertility diagnosis and treatment, from September 2007 to September 2012. The protocol of study was conducted in compliance with human care standards outcome of Allow IVF

center and Ethics Committee of Faculty of Medicine Sana'a and Health Sciences University. All couples had evaluated by the same gynecologist and infertility specialist. The management protocol, abides to recommendations of European Society of Human Reproduction and Embryology (ESHRE) Cari Workshop Group [7].

The basic and complete medical history has collected from both partners. Data include age, address and duration of infertility, pelvic or general surgery history, social history, and sexual history. For women menstrual history and history of chronic pelvic inflammatory disorders were reported.

The hormonal investigation for women was done according to the days of menstrual cycle. Base-line hormonal investigation was suggested for women with dysmenorrhea (estradiol, luteinizing, follicle-stimulating hormones and testosterone). Prolactin and progesterone investigation was done on the day 21st of menstrual cycle. On the day 4-5 of cycle, women sent to do hysterosalpingography (if it is needed). HSG is not performed in cases of known bilateral tubal factor, endometriosis, laparoscopy results indicated pelvic factor or the women had done it before or male is suffering from severe oligoasthenoteratospermia and need IVF. Serial transvaginal ultrasounds (day 9, 12 and 15 of cycle) were done to follow the follicular and endometrial growth.

The causes of infertility were classified according to: Oligo/ovulatory female factor infertility, tubal factor infertility, male factor infertility and unexplained infertility.

- Oligo/ovulatory female factor infertility was defined according to Rotterdam criteria [8]. Oligomenorrhea defined as a menstrual cycle more than 35 days. Anovulatory cycle is the cycle without ovulation and with luteal phase deficiency plus minus hyperprolactinemia.
- Tubal factor infertility was defined according to the results of HSG as closed tubes (unilateral-only one side blocked and bilateral-both sides are blocked).
- Male factor infertility was defined by routine semen analysis parameters according to the guideline of World Health Organization (WHO) [9]. Asthenospermia-Decrease sperm motility less than 50%; Oligoasthenoteratospermia-decrease in the account number and sperm motility and increase in the percentage of sperm abnormality according to WHO guidelines [9].
- Unexplained infertility was diagnosed when all the above factors were within the normal values and conditions.

Results

The data of 2622 was evaluated, retrospectively, during the period from September 2007 to September 2012. The mean age of women was 27.41 ± 4.93 (21-40) and for their husbands was a 32.74 ± 5.71 (26-48) year. The mean duration of infertility was 2.38 ± 1.93 years. Primary infertility was documented in 63% of cases. The distribution of causes on infertility is demonstrated in **Table 1.** The male factor infertility was 29.90% (1281/2622) versus female factor of infertility which was 24.37 in **Table 1**.

The infertility factors are demonstrated in the **Table 2.** The male factor is dominant compared to female (29.90% versus 24.37%). Unexplained infertility was diagnosed in 11.48% of the cases.

Discussion

To the best of our knowledge, this is the first report on the distribution of infertility causes in Yemen. The results of the present study showed that male infertility still the common and the seminal fluid infection and sperm agglutination is the highest sub-division of male infertility factor (17.73% out of 29.90% of male infertility factor). The isolated oligo/ovulatory female infertility factor is the governing of female infertility factors among whole population (20.76%). The combined infertility has been found in 34.25% of population. Two combined infertility factor, oligo/ovulatory and seminal fluid infection and sperm agglutination, was the highest (13.88%) combined two infertility factors vs oligo/ovulatory and tubal and male factor (0.80%) and oligo/ovulatory and isolated asthenospermia (11.02%). The isolated tubal infertility factor was found in 3.70% (97/2622) of infertile women involved in this study. The rate of unexplained infertility was observed in 11.48% of the population.

Table 1 Distribution of infertility causes.

Diagnosis	Subdivision of infertility causes	Number of Cases	% of causes of infertility
Oligo/ovulatory Infertility	Isolated	542	20.67
Tubal factor infertility	Unilateral	61	2.33
	Bilateral	36	1.37
Male factor infertility	Isolated AS*	138	5.26
	Isolated OATS#	181	6.90
	Seminal fluid infection and sperm agglutination	465	17.73
Combined infertility	Oligo/ovulatory and Isolated AS	289	11.02
	Oligo/ovulatory and seminal fluid infection and sperm agglutination	364	13.88
	Oligo/ovulatory and tubal and male factor	21	0.80
	Others	224	8.54
Unexplained infertility		301	11.48
Total		2622	100.00

Table 2 Distribution of infertility factors.

Percentage of infertility factors		
	Number	**%**
Female	639	24.37
Male	784	29.90
Combined	898	34.25
Unexplained	301	11.84
Total	2622	100

Table 3 shows the results of the current study compared to other findings in different population and countries [6, 10-14]. In the last thirty years, the percentage of male infertility stills the highest factor in all studies and anovulation is the second most common cause of infertility [6, 10].

In our population, the tubal infertility was reported 3.70% of cases which is the lowest in compare to the other surveys [6]. In Siberia, in 1998, the prevalence of tubal factor was documented the highest in all surveys demonstrated in **Table 3** [12]. This finding might be associated with geography and developmental status of the country as well as population involved in these surveys [6].

We reported similar percentage of combined infertility (34.25%) compared to the others surveys [12, 13]. The rate of combined infertility is depended on the rate of two factors of infertility mainly, anovulation and seminal fluid infection and sperm agglutination or anovulation and asthenospermia. Farhi and Ben-Haroush in 2011 reported lowest percentage of combined infertility compared to our findings as well as others [6].

Our rate of unexplained infertility was 11.48% whereas in all surveys involved in this analysis it was calibrated in the range between 4.7% and 28% [11, 14]. This variation of unexplained infertility rate, we think, is depended on the protocol that was used to investigate the infertile couples during the process of investigation. The exclusion couples from this survey were due to lack of full investigation or missed follow-up.

In summary, male factor infertility and anovulation, in the last thirty years, are still the driving causes of infertility problem in our population. The seminal fluid infection and sperm agglutination were the common male infertility subdivision causes in separate and combined infertility. We think that the symptomless seminal fluid infection in our population plays in important role in the development of male infertility. It is sterile infection in the majority of cases. Chronic form of this sterile infection usually ends with development of antibodies that we can find in the semen analysis as sperm agglutination.

Clinical Implications

Study the distribution of infertility causes in our population is the implication of the present work. We are looking to improve the awareness of our young population in case of environmental causes of infertility. We mean here, for example, the symptomless sterile semifinal fluid infection which we found here is the remarkable cause of male infertility in separate male infertility cases as well as in combined. Through a complex of program which this study will be the background for it, we hope the knowledge about infertility and it causes in our population will be improved and that will lead to decrease the social and environmental factors that are playing an important role in the pathogenesis of infertility.

Acknowledgment

Table 3 Comparison of studies on distribution of infertility causes in different population and countries.

Authors	Country	Date	Anovulation	Male	Tubal	Combined	Unexplained
Present study	Yemen	2016	20.67%	29.90%	3.70%	34.25%	11.48%
Farhi and Ben-Haroush [6]	Israel	2011	37%	45%	18%	18%	20.7%
Elussein et al. [10]	Sudan	2008	29.7%	36.2%	19.5%	---	13.0%
Chiamchanya and Suangkawatin [11] Thailand	Thailand	2008	20.8%	74%	21.5%	55.6%	4.7%
Philippov et al. [12]	Siberia	1998	17.3%	45.1%	31.6%	38.7%	2.2%
Thonneau and Spira [13]	France	1992	32%	57%	26%	39%	__
Hull et al. [14]	UK	1985	21%	24%	14%	__	28%

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