

The Etiological Factors of Infertility among Couples Attending the Infertility Clinic of Baghdad Teaching Hospital during the Years 2013 and 2014

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ABSTRACT

Background: The difficulty to conceive or subfertility considered a major social and psychological burden among couples in our country Iraq. About a third of infertility problems are due to female infertility, and another third are due to male infertility. In the remaining cases infertility affect both partners and the cause is unclear. Risk factors of infertility are numerous; age, smoking, alcohol, obesity, malnutrition, sexually transmitted infections, etc.

Objectives: To identify the type of infertility whether primary or secondary, knowing the most common causes and highlighting the most frequent cause.

Methods: A cross-sectional study conducted in the infertility clinic of Baghdad teaching hospital, collecting data during the period from the first of January to the 31st of April 2016.

Results: Primary infertility was (60.3%) higher than secondary infertility (39.7%), unexplained infertility was (14.7%), sperm abnormalities was the leading cause of male infertility (45.5%), while polycystic ovaries was the most frequent cause in females (33.2%).

Conclusion: Sperm abnormalities in males and polycystic ovaries in females recorded the highest percentages in infertility causes, primary infertility recorded higher percentage than secondary infertility.

Keywords: Infertility, Primary infertility, Secondary infertility, Polycystic ovary syndrome, Sperm abnormality.

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Infertility is the inability of a couple to achieve pregnancy over an average period of one year (in a woman under 35 years of age) or 6 months (in a woman over 35 years of age) despite regular and adequate (3-4 times per week) of unprotected sexual intercourse⁽¹⁾. Primary infertility in which the couples have never been able to conceive; while in secondary infertility difficulty in conceiving after having conceived (either carried a pregnancy to term or miscarriage). Main factors associated with infertility are weight, smoking and age, and other factors are nutrition, physical activity, psychological stress, caffeine and alcohol all affect the reproductive ability. Women between 20 and 24 years of age (have the highest reproductive ability and chance of pregnancy). On average, 85-90% of young and healthy couples achieve pregnancy within one year of unprotected intercourse.

The infertility rate is 10-15% for women younger than 35 years, this rate increases to about 33% for women in 35-40 age group, while 87% of 45 years old women have no possibility of conceiving a child, after 35 years of age. Infertility is present in 50% of couples, and the percentage of those with primary infertility increases^(2,3).

Regarding causes of infertility in females are; anatomical, physiological and genetic factors, ovulation problems, uterine tube problems, endometriosis, uterine etiology problems, and chromosomal problems while in males spermatogenesis disorders and azoospermia are stated as the most common causes of infertility^(2,3).

The estimated prevalence of infertility in developed countries was estimated 3.5-16.7% and in the developing countries was 6.9-9.3%⁽⁴⁾.

In Iraq, infertility has various effects on sexuality, self-image, and self-esteem for men (as many of them regard fathering a

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child as a confirmation to their masculinity) same for women (number of them regard child bearing as an expression of their biological identity as a female), therefore the wide spread in the number of in vitro fertilization (IVF) centers and infertility clinics, might reflect a high prevalence of infertility in Iraq. Few publications was tackling infertility in Iraq therefore this study was carried out.

The aim of the study is to identify the type of infertility (primary versus secondary infertility), determine the causes of infertility among couples and their age.

Methods

This is a cross-sectional study conducted on records of couples who were registered in the infertility clinic of Baghdad teaching hospital (from the first of January 2013 to 31st of December 2014).

The study was conducted on data collected by reviewing case records of the infertile couples. The data collection from records in the infertility clinic was conducted for 3-4 days per week by from 8:30 a.m. to 1 p.m. and the entire process took 3 months from Jan-April 2016.

The requested data include: 1. Demographic data for both sex (age, occupation). Occupation part in the records where only marked as employed or free job so no important occupational jobs where available to be studied. 2. Duration of infertility. 3. Type of infertility whether primary or secondary. 4. The cause of infertility as it was written in the records. 5. Laboratory investigations: hormonal assay for the evaluation of ovulation include serum (FSH, prolactin, progesterone, estradiol and thyroid hormones). Sophisticated tests were done on requirement e.g. hysterosalpingiogram for the assessment of the uterus and patency of the fallopian tubes, test for chromosomal

studies and sometimes surgical interference like laparoscopy when a decision is made for its vital need for the diagnosis.

Inclusion criteria include: 1. Patients who failed to conceive after 1 year of unprotected intercourse. 2. Age range of females (15-45) year. 3. Males with all ages where studied. 4. Completeness of the results, for this purpose those who had completed the examination will be evaluated, and the results were confirmed by a specialist.

Results

A total number of 630 files for males and females were reviewed by the researcher to assess infertility patterns but only 286 file included in the study (the diagnosed completed files).

Primary infertility (60.3%), secondary infertility (39.7%) in the total number of the sample of the study (males, females), (Table 1).

Mean age for males in sample was 33.1 ± 7.6 y, while female mean age was 27.1 ± 6 y. There was significant difference between the age of males and females in the sample, (Table 2).

Unexplained infertility among couples percentage was found 14.7% of the causes, (Table 3).

In studying the frequency of male causes of infertility, sperm abnormalities (45.1%), azoospermia (5.9%), and hypogonadism (3.5%), (Table 4).

In studying the frequency of female causes of infertility; polycystic ovaries (33.2%), ovulation dysfunction (8%), tubal factors (5.6%), hyperprolactinemia (5.9%), uterine factors (1.4%), hypothyroidism (0.7%), endometrioma (1%), and hypogonadism (2.1%), (Table 5).

Table 1: Distribution of couples by type of infertility.

Type of infertility	Number	%
Primary infertility	345	60.3
Secondary infertility	227	39.7
Males females	572	100.0

Table 2: Distribution of studied couples by age (in years).

Sex	No.	Age (years)	
		Mean	SD
Male	286	33.1	7.6
Female	286	27.3	6.0

t = 9.5, d.f. = 570, p = 0.0001

Table 3: distribution of infertility among the couples.

Cause in couples	Number of couples	%
(unexplained)	42	14.7
Defined causes of infertility	244	85.3
Total	286	100

Table 4: Causes of infertility among males.

Male causes	No.	%
No defined cause	130	45.5
Sperm abnormality	129	45.1
Azoospermia	17	5.9
Hypogonadism	10	3.5
Total	286	100.0

Table 5: Causes of infertility among females.

Female causes	No.	%
No defined cause	120	42.0
Polycystic ovaries	95	33.2
Ovulation dysfunction	23	8.0
Tubal factors	16	5.6
Hyperprolactinemia	17	5.9
Uterine factors	4	1.4
Hypothyroidism	2	0.7
Endometrioma	3	1.0
Hypogonadism	6	2.1
Total	286	100.0

Discussion

The current study revealed that primary infertility (60.3%), secondary infertility (39.7%). These figures are in consistent with that in Duhok⁽⁵⁾, and similar to that in Al-Najaf and Thailand studies

respectively^(6,7). But differ from that in Nigeria, primary infertility 14.3% and secondary infertility 85.7%⁽⁸⁾. This difference might be attributed for difference in the sample and environment. Mean age for males in study sample was 33.1 ± 7.6 y, while female mean age was 27.1 ± 6 y.

There was significant difference between the age of males and females in the sample, and that may reflect the trend in Iraqi society. Unexplained infertility among couples percentage was found 14.7% of the studied couples in the sample and this result is close to that in Lagos, Nigeria study (11.1%) and Africa (10.4%)^(9,10). In studying the frequency of male causes in infertility, sperm abnormalities (45.1), it's in an agreement with other studies in Iran and Senegal, respectively, (44.6, 40.8)^(11,12). Azoospermia (5.9%) it is consistent with that in Nigeria (7%)⁽¹³⁾, it is explained by exposure to war (may be radiated weapon were used in Bosnia) attributed to this high number. Hypogonadism (3.5%) It is near to that in Baltimore study of aging looking at prevalence of hypogonadism (3-8%)⁽¹⁴⁾. It may be due to different causes; thalassemia, hyperprolactinemia, thyroid disease etc. This finding might reflect the delay diagnosis of endocrine abnormality, and mismanagement of hereditary anemias, which may reflect the deterioration of the health system in Iraq due to wars. One of several studies documented the deterioration of health system in Iraq^(15,16). This finding may also reflect the denial in community to overcome stigma on abnormalities, so the families rush to marry their sons.

In studying the frequency of causes in infertility in females; it was found that polycystic ovaries recording about (33.2%) of the females in the study and this is high rate in comparison with other studies in European society 15-20 %⁽¹⁷⁾, and 9.13% in India⁽¹⁸⁾. The diagnosis of PCOS depends on a different criteria, which have been identified by three groups established a diagnostic criteria; National Institute of Health, National Institute of Childhood and Human Disease (NIH/NICH)⁽¹⁹⁾ 1990; (chronic anovulation and hyperandrogenism), European Society of Human Reproduction, American society of microbiology (ESH/ASM)⁽²⁰⁾ 2003; (two of oligo menorrhoea and/or anovulation plus hyperandrogenism and/or polycystic ovaries by ultrasound), and androgen excess (AR-PCOS)⁽²¹⁾ 2009;

(hyperandrogenism and ovarian dysfunction), and that difference may be also to geographical variation⁽²²⁾. The finding that PCOS as a cause of infertility in 33.2% is almost close to that in literature (40%)⁽²³⁾. Ovulation dysfunction (8%), which is less than that in Iran (50.3%)⁽¹¹⁾ this wide range difference due to multiple causes of ovulatory dysfunction. Articles from Iran documented a hormonal change was due to exposure to war (1980-1988)⁽²⁴⁾. Tubal factors (5.6%), it is similar to that in Duhok (5%)⁽⁵⁾; high figures was reported in Iran (15.3%)⁽¹¹⁾. The difference might be explained by using hysterosalpingiogram (HSG) as a routine test in the center of Iran, while in Baghdad center they have to refer the patients to Al-Yarmouk or Al-Kadima hospitals. Hyperprolactinemia (5.9%) that was consistent in the results of other studies (5-9%)⁽²⁵⁾.

The finding that uterine factors (1.4%), which is lower than that reported in Thailand (9.1%)⁽⁷⁾ and that in Iran (16.7%)⁽²⁴⁾. This difference might be explained by limiting the use of certain equipment's like laparoscopy to highly suspicious cases not as a routine test to every infertile female in the center. Hypothyroidism (0.7%), endometrioma record only (1%) of study cases which is close to that reported in Bosnia⁽²³⁾. Hypothyroidism was in only 0.7% of cases which is less than result in other studies which is 2-4% and that due to the fact that thyroid disease varied with geographical location⁽²⁶⁾.

Hypogonadotropic hypogonadism was recorded in 2.1% of cases in the study. It is difficult to comment on this finding. It is may be due to primary or secondary causes.

In conclusion, sperm abnormalities in males and polycystic ovaries in females recorded the highest percentages in infertility causes, primary infertility recorded higher percentage than secondary infertility. Age of males does not affect the infertility. Age of the females was varied between the causes of infertility.

References

1. TG Cooper, E Noonan, S von Eckardstein. World Health Organization reference for human semen characteristic. *Reprod* 2010; 16(3): 231-45.
2. Baird DT, Collins J, Egozcue J, et al. Fertility and ageing. *Hum Reprod Update* 2005; 11:261-76.
3. Ziebe S, Devry P. Assisted reproductive technologies are an integrated part of national strategies addressing demographic and reproductive challenges. *Hum Reprod Update* 2008; 14:583-92.
4. Boivin J, Bunting L, Collins J, Nygren K. International estimates of infertility prevalence and treatment-seeking: potential need and demand for infertility medical care. *Hum Reprod* 2007; 22: 1506-12.
5. Razzak AH, Wais SA. The infertile couple: a cohort study in Duhok, Iraq. *East Mediterr Health J* 2002; 8(2-3):234-42.
6. Al-mafraji HM, Fakhridin MB. Assessment levels of some reproductive hormones for Iraqi infertile women classified according to type and duration of infertility. *WIPPS* 2015; 5(1): 1442-8.
7. Chiamchnaya C, Su-angkawatin W. Study of the causes and the results of the infertile couples at Thammasat hospital between 1999-2004. *J Med Assoc Thai* 2008; 91(6):805-17.
8. Orhue A, Aziken M. Experience with a comprehensive university hospital based infertility program in Nigeria. *Int J Gynaecol Obstet* 2008; 101: 11-15.
9. Adegbola O, Akindele MO. The pattern and challenges of infertility management in Logas, Nigeria. *Afr Health Sci* 2013; 13(4): 1126-9.
10. Abebe MS, Afework M, Abaynew Y. Primary and secondary infertility in Africa: systemic review and meta-analysis. *Fertil Res Pract* 2020; 6(1):20. doi: 10.1186/s40738-020-00090-3.
11. Masoumi SZ, Prsa P, Darvish N, Mokhtari S. An epidemiologic survey on the causes of infertility in patients referred to infertility center in Fatemeh hospital in Hamadan. *Iran J Reprod Med* 2015; 13(8): 513-6.
12. Diallo MS, Diallo AS, Fosto P, Diallo Y, Diao B, Faye. Semen abnormality patterns and parameters in male partners of infertile couples in Dakar (Senegal). *Open Journal of Urology* 2015; 5: 155-60.
13. Ugwuja EI, Ugwua NC, Ejikeme BN. Prevalence of low sperm count and abnormal semen parameters in male partners of women consulting at infertility clinic in Abakaliki, Nigeria. *African Journal of Reproductive Health* 2008; 12(1):67-74.
14. Ramasamy R, Armstrong JM, Lip Shultz LL. Preserving fertility in the hypogonadal patient: An update. *Asian J Androl* 2015; 17(2): 197-200.
15. Al-Hilfi TK, Lafta R, Burnham L. Health services in Iraq. *Lancet* 2013; 381: 939-48.
16. Ashraf Ma Hussain, Riyadh K Lafta. Accidents in Iraq during the period of conflict (2003-2016). *Qatar Med J* 2019; 2019(3):14. doi: 10.5339/qmj.2019.14. eCollection 2019. PMID: 31903321
17. Sirmans SM, Pate KA. Epidemiology, diagnosis, and management of polycystic ovary syndrome. *Clin Epidemiol* 2014; 6: 1-13.
18. Nidhi R, Padmalatha V, Nagarathna R, Amritanshu R. Prevalence of polycystic ovarian syndrome in Indian adolescents. *J Pediatr Adolesc Gynecol* 2011; 24(4):223-30.
19. Zawadski JK, Dunaif A. Diagnostic criteria for polycystic ovary syndrome: toward a rational approach. In: Dunaif A, Givens JR, Haseltine FP, Merriam GR (editors). *Polycystic Ovary Syndrome*. Boston. Blackwell Scientific publication; 1992. pp 377-84.
20. Rotterdam ESHR/ASM-Sponsored PCOS consensus on diagnosis criteria and long-term health risks related to polycystic ovary syndrome. *Fertil Steril* 2004; 81:19-25.
21. Aziz R, Carmina E, Dewailly D, Dimmanti-Kananaski E, Escobar-Morreale HF, Futterweit W et al. The androgen excess and PCOS society criteria for the polycystic ovary syndrome: the complete task force report. *Fertile Steril* 2009; 91:456-488.
22. Wolf WM, Wattick RA, Kinkade ON, Olfert MD. Geographical prevalence of polycystic ovary syndrome as determined by region and race / ethnicity. *Int J Environ Res Public Health* 2018; 15(11): 2589. doi: 10.3390/ijerph15112589.
23. Aska FM, Media GS, Ronak AI. Ultrasonographic prevalence of polycystic ovary morphology among women of reproductive age group. *Zanco J Med Sci* 2019; 1:57-60.
24. Tehrani FR, Simbar M, Tohidi M, Hosseinpanah F, Azizi F. The prevalence of polycystic ovary syndrome in a community sample of Iranian population: Iranian PCOS prevalence study. *Reprod Biol Endocrinol* 2011; 25:9-39.
25. Majumdar A, Mangal NS. Hyperprolactinemia. *J Hum Reprod Sci* 2013; 6(3): 168-75.
26. Al-Hashimi A, Mohammad M. Fine needle aspiration cytology in thyroid lesions: a personal experience. *DJM* 2014; 6:81-85. 80.

— IMJ 2021; 67(1): 26-30.