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A REGİONAL STUDY ON THE INFERTILITY OF IRAQI MALES UNDER WAR İMPACT FROM 1980 TO 2013

Dr.Mohemıd M Al-Jebouri*

Department of Microbiology, College of Medıcıne, Unıversıty of Tıkrıt, Tıkrıt, Iraq.

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***Correspondence for Author**
Dr.Mohemıd M Al-Jebouri
Department of Microbiology,College of Medıcıne, Unıversıty of Tıkrıt, Tıkrıt, Iraq.

ABSTRACT

Background: Infertility is one of the most serious social problems facing Iraqi peoples particularly young male groups. Iraqi nation suffered from severe environmental stress like war impact, different types of pollution and social stress since 1980 till now. **Methodlogy**: Infertility was typically defined as failure to conceive within a certain period of time locally the couples start attending clinics after six months of marriage if the female was not pregnant yet.All the patients from 1980 to 2013 were examined for seminal general examination to evaluate volume of the semen, alkalinity,number of sperms per ml of semen,morphology of sperms and counts of each type of sperms weither normal or abnormal,motile or sluggish and nonmotile. The semen analysis included presence or absence of pus cells to predict the infection associated. **Results**:Almost 76% of the patients examined (3600 males) were recorded between 2003 to 2013 as suspected infertile patients and the lowest number 224(6.2%) were seen during the period 1980 to 1990.Neisseria gonorrhoeae as STD's was the most common among the patients.Oligoteratoastherozoospermia was dominant picture of the seminal fluids collected.Almost 11% of the patients were cured after long time of treatment, **Conclusion:** Most of the cases were due to unknown origin which need genetic studies specially we are under impact of wars for more than three decades.This situation of wars and sanction might led to unbearable stress on population,in addition to environmental pollution with physical,chemical and biological parameters.

KEYWORDS: Male, infertility, infections, war impact, Iraq.

1. INTRODUCTION

One of the most serious social problems facing developed countries today is the declining birth rate, although it is generally not well recognized that the number of infertile couples is on the rise in these countries. While both social (i.e., social progress for women and the resulting increase in the age at which women marry) and environmental (i.e pollution and global warming) factors are behind part of the increase in the number of patients with infertility, infertility in the male partner contributes to approximately half of all cases.[1] Iraq is one of few developing countries faced a horrible long series of wars for more than three decades and still involving in this destructive civil wars.This series of wars resulting in elevation of so many diseases as a result of war impact. Male-factor infertility is a well-known health issue all over the world including middle east countries, Africa and other developing countries; it presents a particularly vexing clinical problem.[2] It has been estimated that infertility of couples affects 10-15% of the general population.[2] The prevalent rate varies between and within countries. For instance, in the United Kingdom and the United States of America it is estimated to be 6% and 10% respectively.[3] In Denmark, it is estimated to be in the region of 15.7%.[4] In Nigeria and some parts of sub-Saharan Africa including the Republic of Sudan and Cameroon, infertility rate could exceed 30%.[5,6,7] Some studies reported in South-eastern Nigeria, have demonstrated a 65% and 35% prevalent rate for primary and secondary infertility respectively.[8] Similarly, some countries, most notably Kenya, Gabon, Botswana, Zimbabwe and many other African countries, have shown a trend toward lower fertility.[5,9,10,11] However,we have not a national study in Iraq concerning infertility of couples, so the present study is an attempt covering part of Iraq to assess the changing picture of male infertility in a peculiar condition which is the series of wars.

2. MATERIALS AND METHODS

Patients

3600 male patients attended clinics complaining from infertility were studied.These patients were from different localities,Baghdad,Mosul,Tikrit,Al-Hawija and Al-Zab i.e from middle to North of Iraq.

The seminal fluid analysis was carried out following WHO Laboratory Manual.[12]

Isolation and identification of bacteria

All bacterial isolates were identified following Cowan and Steel's Manual for Identification of Medical Bacteria.[13]

3. RESULTS

The present study revealed significant differences between patients of the three peroids of study (Table 1) with P value less than 0.01.The highest number of patients was recorded in period between 2003 to 2013 and the least number recorded was in the period between 1980 to 1990.

Table 1.Prevalence of male ınfertılıty sınce 1980

Perıod	No.	%
1980-1990	224	6.2
1991-2002	636	17.7
2003-2013	2740	76.1
Total	3600	100

Table 2 shows that the most pathogen isolated during the present study was *Escherichia coli* particularly during the period between 2003 to 2013. *Chlamydıa trıchomatıs* and *Ureaplasma Urealyticum* were occasionally isolated. Eight different species causing infection for infertile males were seen in the present study.*Neisseria gonorrhoae* was decreased in number of isolation from 1980 to 2013.Treponema pallidum was occasionally serologically identified through the peroids of study.The present study revealed significant differences in distribution of different pathogens utilizing ANOVA test ($P < 0.05$).

Table 2.Prevalence of pathogens ın male ınfertıle patıents

Pathogens	1980 -1990 No.(%)	1991 -2002 No.(%)	2003 -2012 No.(%)
Escherıchıa colı	20(22)	21(29.6)	43(24.7)
Streptococcus faecalıs	10(11)	12(16.9)	36(24.8)
Staphylococcus aureus	18(20)	12(16.9)	32(22.1)
Proteus vulgarıs	13(14.3)	16(22.5)	20(13.8)
Neısserıa gonorrhoeae	25(27.8)	8(11.3)	6(4.1)
Treponema pallıdum	3(3.3)	2(2.8)	1(0.7)
Chlamydıa trıchomatıs	1(1.1)	0	3(2.1)
Ureaplasma Urealyticum	1(1.1)	0	4(2.8)
Total	91	71	148

Table 3 shows the different pictures of semen with respect to characteristics of sperms.The most dominant type was oligoteratoastherozoospermis which represented by 41.7 % (1500/3600).The lowest type of sperms was oligospermia i.e 2.2 % .Statistical analyses utilizing ANOVA test revealed a high significant differences between these types listed in Table 3 ($P < 0.01$).

Table 3.Prevalence of male ınfertılıty types

Infertılıty type	No.	%
Azoospermıa	410	11.4
Olıgospermıa	80	2.2
Olıgozoospermıa	630	17.5
Astherozoospermıa	360	10
Teratozoospermıa	430	11.9
Olıgoteratoastherozoospermıa	1500	41.7
Normal	200	5.6
Total	3600	100

Statistical analyses were performed on concentrations < and>0.5 X 106/ml and < and > 1X 106/ml WBC. The former value was the threshold recommended. The median percentage normal sperm morphology for < and > 0.5Xl06/ml PMN and the median percentage normal sperm morphology for < and >1.0Xl06/ml PMN was calculated (Table 4).

Table 4.Prevalence of leucocytospermıa ın male ınfrtılıty patıents

Threshold	No.	%
1×10^7	200	9.8
5×10^6	600	29.4
1×10^6	422	20.7
5×10^5	818	40.1
Total	2040	100

Table 5 shows the treatable patients among the total number examined.It was found that 11.5% of the collective number were treated and they had a babies after at least one year of treatment and following up.Azoospermia and oligospermia were the most responsible to be treated and their percentages of treatable cases were 27.3 and 22.5 respectively.Statistical analysis did not show a significance difference (P > 0.05).

Table 5.Prevalence of patıents treated to be fertıle

Infertılıty type	Patıents treated	Patıents cured(%)
Azoospermıa	410	112(27.3)
Olıgospermıa	80	18(22.5)
Olıgozoospermıa	630	125(19.8)
Astherozoospermıa	360	56(15.6)
Teratozoospermıa	430	32(7.4%)
Olıgoteratoastherozoospermıa	1500	72(4.8)
Total	3600	415(11.5)

4. DISCUSSION

The present study showed that the incidence of male infertility was elevated as the war and its impact went on in the country since 1980 t0 2013.The impact of war and its parameters highly influenced the fertility of males. Male infertility has many causes from hormonal imbalances, to physical problems, to psychological and/or behavioral problems. Moreover, fertility reflects a man's "overall" health. Men who live a healthy lifestyle are more likely to produce healthy sperm. The following list highlights some lifestyle choices that negatively impact male fertility,it is not all-inclusive: Smoking significantly decreases both sperm count and sperm cell motility, prolonged use of marijuana and other recreational drugs, chronic alcohol abuse, anabolic steroid use causes testicular shrinkage and infertility, overly intense exercise produces high levels of adrenal steroid hormones which cause a testosterone deficiency resulting in infertility, inadequate vitamin C and zinc in the diet, tight underwear increases scrotal temperature which results in decreased sperm production, Exposure to environmental hazards and toxins such as pesticides, lead, paint, radiation, radioactive, substances, mercury, benzene, boron, and heavy metals, malnutrition and anemia, excessive stress and modifying these behaviors can improve a man's fertility and should be considered when a couple is trying to achieve pregnancy.[1,14] However,it was concluded that 90% of the attended clinic suspected primary infertility were young males of under 30 years old.Most of the infertile males were suffered from oligoteratoastherozoospermia.This mixed pathology type of semen abnormality was recorded by Abarikwa.[2] Furthermore,the present study revealed that *Escherichia coli* was the most prevalent pathogen isolated from infectious semens tested.This finding was also recorded by Okonofua et al.[15] The infectious semens found in the present study were confirned by the association of high number of leucocytes which elevated sometimes to reach $10^{7.}$ Genetic polymorphisms may also increase susceptibility to some forms of male infertility. Workers have identified polymorphisms of several genes that are associated with the human azoospermic population—*MEI1, PRDM9 (MEISETZ), SPATA17, PARP-2*, and *UBR2* genes are genetic risk factors for the patients with azoospermia by meiotic arrest[16,17,18,19,20], and polymorphisms of the *SEPTIN12* gene are associated with patients with Sertoli cell-only syndrome.[21] Genetic polymorphisms and male infertility have been under much investigation recently. Some genes identified to be associated with male infertility in the past years include: *MTHFR, SHBG, Piwi, CYP19A1, NER, GSTM1 BCL2, ESR1, ESR2, eNOS, TNP1, SOHLH1, EPPIN, GSTT1, TSSK6, TSSK2, MDR1, MSH5, MLH3, H2BFWT, PACRG*, and *FASLG*.[22,23,24] Despite identification of these genes, neither the mechanisms of human spermatogenesis nor the association of these genes

with each other is well known. I believe that environment and war impact are an important factor associated with genetic polymorphisms in human spermatogenesis. Further analysis is thus strongly needed to determine the association between genetic polymorphisms and environmental factors.

5. CONCLUSION

The effect of war impact was very effective on male infertrility of Iraq.A mixed pathology of semen sperms i.e oligoteratoastherozoospermia was the most common feature of semens analysed.A farher investation particularly genetical and various war impact parameters assessment is needed.

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