MALE INFERTILITY IN LIBYAN ARAB JAMAHIRIYA

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Abstract

Male infertility is also an important social problem. 160 male subjects were examined in Libya. 90.00% subjects were between the age of 20-30 years. Out of 160 male 60 (37.50%) were normospermic. 60 (37.53%) oligospermic , 28 (17.50%) azoospermic and 12 (7.50%) were Necrospermic . So 63.50% subjects had fertility problem.

Introduction

Due to over emphasis on the necessity of population control in recent times, infertility is often neglected in many developing countries. In the densely populated areas of Asia, Africa and Latin America, most of the Governments are concerned to the problem of over population to such an extent that, in those countries 'Family Planning' has become almost synonymous with 'Birth Control'. But infertility is always a social and personal problem in all countries, rich or poor. The failure to procreate is not less painful for the infertile couple than the problem of too many children in a poor family. However, in the developed countries whereover population is not a problem, infertility still remains an important social and medical problem. Again in some developing but very rich countries like oil-rich Libya, where population is too small for its vast land and natural resources, infertility is one of the major medical problem. In Tripoli, the capital of Libya, infertility cases represent 31.48% of all cases of endometrial biopsies (Muazzam and Elkassaby, 1983).

In Libya married couples expect children within one year of marriage. During my stay in that country I had the opportunity to investigate both male and female subjects seperately for primary inferitility. No such report has so far been published from Libya. The present paper deals with the semen analyses of male infertile subjects in Libya.

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Age-group	Normo-spermic	Oligo-spermic	Necro-spermic	Azoo-spermic	Total	Percentage
19 years	1	1	1	-	3	1.85
20-25 yrs.	32	37	6	17	92	57.50
26-30 yrs.	22	19	5	6	52	32.50
31-35 yrs	2	3	-	3	8	5.00
36-40 yrs.	1	-	-	1	2	1.25
41-45 yrs.	1	-	-	1	2	1.25
46 years	1	-	-	-	1	0.65
Total	60	60	12	28	160	100.00

Tablel-1. Age-distribution.

Volume in ML.	Normo-spermic	Oligo-spermic	Necro-spermic	Azoo-spermic	Total	Percentage
Less than 1.0 ml.	-	7	3	5	15	9.37
1-2.0 ml.	18	20	3	8	49	30.62
2.1-3.0 ml.	23	17	-	5	45	28.12
3.1-4.0 ml.	8	10	3	5	26	16.25
4.1-5.0 ml.	8	4	-	2	14	8.75
5.1-6.0 ml.	2	1	2	-	5	3.12
6.1-7.0 ml.	-	-	1	-	1	0.63
7.1-8.0 ml.	-	1	-	2	3	1.89
8.1-8.6 ml.	1	-	-	1	2	1.25
Total	60	60	12	28	160	100.00

Table-2. Volume of semen specimens.

Materials and Methods

Semen analysis was done of 160 male subjects referred for the investigation of primary sterility. The examinations were done in the UQBA-bin-Naafe army hospital laboratory in Tripoli during 1975-76. The Seminal specimens were produced by the patients in the laboratory by masterbation; colour, viscosity and reactions and motility were noted and the specimen was allowed to liquify at room temperature. After about $\frac{1}{2}$ to 1 hour, sperm count per ml was done by haemocytometer. Morphology was studied, and the total volume measured. In cases where analysis was repeated, the average was taken as one examination. Morphology and motility were studied by eye estimation in thin covership preparations. The presence of abnormal cell if present was also noted.

Results

Table 1 shows the age distribution of the subjects, 90.00% (144) patients belonged to the age-group of 20-30 years.

Table 2 shows the volume of seminal fluids. 9.37% (15) specimens had a volume less than 1.0 ml and 83.75% (134) had volume of 1.0-5.0 ml., the range of volume being 0.25 ml-8.6 ml.

Table 3 shows the number of sperms per ml, the range being 0.001 million to 300 million. 61.36% (81) specimens had a sperm count below 50 million per ml., while 38.64% (51) had normal count of 50-300 million per ml. 28 (17.50) specimens were Azoospermic (Table1).

Number of sperms per ml.	Normo permic	Oligo spermic	Necro spermic	Total	Percentage
Less than 1.0 million	-	22	10	32	24.24
10-20 Million	-	14	2	16	12.12
21-49 Million	12	21	-	33	25.00
50-100 Million	22	2	-	24	18.18
101-150 Million	11	1	-	12	9.10
151-200 Million	8	-	-	8	6.06
201-250 Million	4	-	-	4	3.03
251-300 Million	3	-	-	3	2.27
Total	60	60	12	132	100.00

Table -3. Number of sperms per ml. in 132 specimens.

Table 4 (a) shows the number of sperms per ejaculate. Among 132 spermic subjects, 37.88% (50) subjects had less than 50 million sperms per ejaculate.

Table 4 (b) shows the total number of active sperms per ejaculate. 72 (72) had less than 50 million active sperms per ejaculate.

Table 5 shows the types of semen found in this study taking 50 million normal active sperms per ejaculate as the minimum lower limit for normospermia. 37.50% (60) specimens were normospermic.

Table 6 (a) & (b) show the percentage of motility and morphologically normal sperms respectifvely in the three categories in which sperms were present.

Table 7 shows the viscosity and colour of the specimens.

Table 8 shows the duration of sterility.

Discussion

Age - 144 (90.0%) subjects belonged to the usual age of marriage - 20 to 30 years. Only 3 (1.88%) were 19 years old and the remaining 13 (8.12%) were between 31-46 years. (Table 1). In a similar study in Bangladesh, most of the subjects were between 30-40 years, the range being 25-50 years (Muazzam, 1965). It further shows that in Libya, infertile males go for investigation relatively earlier than those in Bangladesh. It also reflects that the Libyan males marry relatively earlier and expect children soon after marriage. (Table-8)

Volume of Semen - Different workers have given different range of volume as the normal limit. Clayton et al. (1980) reported an average volume of 3.4 ml. with a range of 0.2-6.6 ml. Nelson and Beng (1974) gave a range of 1-7 ml with an average of 2.83 ml. while Harrison and de-Boer (1977) reported 2-7 ml. with an average of 3.5 ml.

Number of sperms per ejaculate	Number of specimens	Percentage
Less than 1.0 million	11	8.33
1.0 m-9.9 Million	15	11.37
10.0 m-49.9 Million	24	18.18
50 m-100 Million	20	15.15
101 m-200 Million	34	25.76
201 m-300 Million	21	15.91
301 m-400 Million	7	5.30
Total	132	100.00

Table-4 (a). Number of sperms per ejaculate.

Number of Active sperms perejaculate	Number of specimens	Percentage
Less than 1.0 million	18	13.64
1.0-9.9 million	20	15.15
10.0-49.9 mill.	34	25.76
50.0-100 mill.	17	12.88
101.0-200 mll.	21	15.91
201 m-300 mill.	14	10.60
301 m-400 mill.	8	6.06
Total	132	100.00

Table-4(b). Active Sperms per ejaculate.

Copenhaver et al. (1971 reported a range of 2-6 ml. while Hudson et al. (1980) gave 1-4 ml as normal volume for 80% fertile men.

The present study shows a range of 1.5 to 7.0 ml. for the normospermic specimens with an average of 2.83 ml., which is similar to the figures of Nelson and Beng. In a similar study in Bangladesh (Muazzam, 1962) the volume of semen of normospermic subjects were 1.5-6.0 ml., which is comparable to the figures obtained in Libya.

The range of volume in the present series, including the abnormal specimens is 0.25 ml. 8.6 ml. and 9.37% (15) had a volume less than 1.0 ml. (Table 2)

Sperm Count - Many workers have reported sperm count per ml of semen and the percentage of motility and morphologically normal sperms as criteria of fecundity. The number of sperms per ml. varies from 50-300 million in average normal subjects. Clayton et al (1980) gave a range of 60-250 million, Nelson and Beng (1974) 48 million, while Americal Fertility society (1971) regard 40 million per ml. as the lower limit. In a previous study in Bangladesh (Muazzam, 1962) 50-160 million per ml. was found among the normospermic specimens. In the present series the sperm count varied from 0.001 million-300 mill. per ml. 81 (61.36%) specimens out of 132 had a sperm count below 50 million/ml while 51 (38.64%) had normal count. Though the normospermic specimens showed a count of 24-300 million/ml with an average of 111.6 million/ml. (Table 3).

But the number per ml is of less importance than the total number of sperms per ejaculate. A very high count in a very small volume has less chance of fecundity.. So, only per ml. concentration should not be accepted as a criteria of fecundity. Again the total number is of no significance unless they are morphologically normal and actively motile. So, number of active sperms per ejaculate in a reasonable volume (not less than 1.0 ml.) is of real significance (Muazzam, 1965). Farris (1950) and Hudson et al. (1980) accept 50 million per ejaculate as the lower limit of normal semen but they do not specify the number of living and morphologically normal sperms in the ejaculate. MacLeod and Gold (1953) reported that fertility was possible with 20 million sperms per ml. I have got a personal information about one person suffering from generalised leprosy from childhood, whose sperm count was 20 mill per ml. but total active sperm were 50 mill per ejaculate, proved himself fertile. On this ground 50 million active sperm per ejaculate in a volume not less than 1.0 ml has been taken as the lower limit of normospermia (Muazzam,1965). In the present series total number of sperms per ejaculate varied from less than 1.0 million to 700 million, and number of active sperms varied from none to 400 million (Table 4(a) and 4(b).

Types of semen - The seminal specimens were divided into 4 types as follows : (Table 5)

(a) Normospermic - taking 50 million living normal sperms per ejaculate as the lowest limit of normospermia (Normal semen). 37.50% (60) specimens were normospermic in this series. This is comparable to 38.50% (50) found in Bangladesh (Muazzam, 1965).

Types of semen	Number of specimens	Percenatage
Normospermic	60	37.50
Oligospermic	60	37.50
Necrospermic	12	7.50
Azoospermic	28	17.50
Total	160	100.00

Table-5. Types of semen taking 50 million sperms per ejaculation as the lowest limit for normospermia.

(b) Oligo spermic - Specimens showing less than 50 million living normal sperms per ejaculate. 37.50% (60) specimens belonged to this group. This is much higher than 20% (26) found in Bangladesh (Muazzam, 1965).

(c) Necrospermic - specimens showing maximum number of deformed sperms are considered as Necrospermia. 7.50% (12) specimens belonged to this group. This is also higher than 4.6% (6) necrospermia found in Bangladesh (Muazzam, 1965). All the necrospermic specimens were oligospermic as well.

(d) Azoospermic - Total absence of any spermatozoon in a specimen is called Azoospermia. In this series 17.50% (28) specimens were azoospermic which is almost half of 36.9% (48) found in Bangladesh (Muazzam, 1965).

Thus the non-fecundating specimens in the series is 62.50% which is comparable to 61.50% found in Bangldesh. But so far the abnormal specimens are concerned, both oligospermia and necrospermia are higher among the Libyans than among the Bangladeshis. Azoospermia on the otherhand is almost double among the Bangladeshis than among the Libyan subjects.

The reason of such high incidence of azoospermia among the Bangladeshi subjects is not clear. To assess this interesting finding semen analysis of normal young adults of both the countries should be done to find out the normal rate of azoospermia in the two nations.

Morphology of the sperms - In the present series 65.91% (87) specimens (87 out of 132) showed 51-90% normal morphology. Among the normospermic specimens 93.33% (53 out of 60) specimens showed 51-90% normal morphology (Table 6(b).

Percentage Normal	Normospermic	Oligospermic	Necrospermic	Total	Remarks
None	-	-	2	2	
1-10%	-	-	6	6	
11-20%	-	4	1	5	
21-30%	-	7	1	8	
31-40%	2	12	-	14	
41-50%	5	9	1	15	
51-60%	12	11	1	24	
61-70%	16	9	-	25	
71-80%	17	6	-	23	
81-90%	6	2	-	8	
91-100%	2	-	-	2	
Total	60	60	12	132	

Table 6(a) Motility of the sperms

Macleod and Gold (1951) reported more than 60% normal sperms in 90% and more than 70% in 80% normal semen.

Among the Oligospermic specimens only 50% (30 out of 60) showed 51-80% normal morphology. In the necrospermic group only one showed 55% normal morphologh. (Table 6(b)

Motility of sperms - In the series 45% (72) showed 51-80% motility, though 75% (45) of normospermic specimens showed 51-80% motility. 40.33% (26) oligospermic and 8.33% (1 out of 12) Necrospermic specimens showed 51-80% motility (Table 6(a). Hudson etal (1980) take 40% motility as an evidence of abnormal semen.

Viscosity - 91.70% (55) normospermic, 66.7% (40) oligospermic, 50%(6) necrospermic and 28.6% (8) azoospermic specimens were of normal viscosity. 64.3% (18) azoospermic specimens showed viscosity less than normal. A small number of all the types of semen showed higher viscosity. So less viscosity is more compatible with abnormal semen. (Table 7)

Colour - 91.7% to 93.3% specimens of all categories of semen except necrospermix had normal colour. So colour is of little significance to indicate abnormality of semen. (Table 7).

From the above discussion it is evident that 25% (40) subjects in this series had definite cause of sterility in the form of azoospermia and necrospermia. From a study of endometrial biopsies of the primary sterility cases in Libya 25.29% (170 to out of 700) showed definite causes of sterility in the form of non-secretory endometrium and endometrial hyperplasia (Muazzam and Elkassaby, 1983). So it seems that in primary sterility among the libyans, male and female partners are equally responsible in 50% cases. The remaining 50% may be due to defects in both of them. But the present study shows that only 37.50% male subjects produced normal semen and the remaining 62.50% had some abnormality.

Similarly in the study among females (1983) 55.14% (386 out of 700) women showed normal functioning endometrium while the remaining 44.86% had some sort of abnormalities. So in case of primary sterility, male partners should first be investgated as it is simple and higher percentage of males are found defective. If the semen analysis is found normal, then the female should be thoroughly investigated.

Percentage Normal	Normo-spermic	Oligo-spermic	Necro-spermic	Total	Remarks
None	-	-	1	1	
1-10%	-	-	6	6	
11-20%	-	1	-	1	
21-30%	-	4	-	4	
31-40%	-	10	3	13	
41-50%	4	15	1	20	
51-60%	18	13	1	32	
61-70%	18	12	-	30	
71-80%	17	5	-	22	
81-90%	3	-	-	3	
91-100%	-	-	-	-	
Total	60	60	12	132	

Table-6(b). Morphology of the sperms.

Duration of sterility - 5.63% (9) came for investigation within one year and 11.25% (18) came after one year of marriage. 46.87% (75) reported for investingation withing 2 years, Though 86.26% (138) came within 5 years of marriage. 12.5% (20) reported for investigation after 5-15 years of marriage and only 1.25% (2) came between 16 to 25 years of marriage. (Table 8)

Usually married couples with good health and ample opportunity for copulation for two years, if fail to conceive, they should submit themselves for investigation of primary sterility. From the present study it is evident that in the rich but underpopulated country like Libya, people are eager to get children soon after marriage.

	Normo-spermic	Per-centage	Oligo-spermic	%	Necro-spermic	%	Azoo-spermic	%
A. Colour :								
Normal	56	93.4	55	91.7	6	50.0	26	92.9
White	2	3.3	5	8.3	4	33.3	2	7.1
Yellow	2	3.3	-	-	2	16.7	-	-
Total	60	100.0	60	100.0	12	100.0	28	100.0
B. Viscolity :								
Normal	55	91.7	40	66.7	6	50.0	8	28.6
Less	1	1.6	13	21.7	5	41.7	18	64.3
High	4	6.7	7	11.6	1	8.3	2	7.1
Total	60	100.0	60	100.0	12	100.0	28	100.0

Table-7. Colour and viscosity of the semen.

In a similar study in Bangladesh in two series, only 10.0% (Muazzam, 1965) and 12.50% Muazzam, 1962) subjects came for investigation within 5 years of marriage) while 80% to 85% came after 5 to 20 years of marriage.

Polygamy - Though polygamy is allowed in Islamic society under certain circumstances, and sterlity is one such situation, it is interesting to note that only 10.0% (16) sbubjects in this series married a second wife (and none more than one) before they came for investigation. One of them, however divorced his wife before second marriage. The period between first and second marriage ranged from 8 months (only one) to 14 years. Among these 16 subjects who married second time, 7 were normospermic, 6 oligospermic 2 necrospermic and one azoospermic.

In the Bangladesh studies 10.60% (Muazzam, 1962) and 13.07% (Muazzam, 1965) indulged in second marriage (none more than one) after 3 to 26 years. This figure is comparable to the figure obtained in Libya, though in general polygamy is commoner in Libya.

This low percentage of second marriage among the sterility cases is no doubt interesting. Inspite of very high rate of illiteracy, general ignorance about defects in male a possible cause of primary sterility and the social acceptance of polygamy in both the Islamic countries of Bangladesh and Libya, such a low incidence of second marriage among the cases of primary sterility indicate that the institution of polygamy is not much misused in these countries.

Duration of marriage	Number of Subjects	Percentage	Remarks
Less than 1 year	9	5.63	
One year	18	11.25	
$1\frac{1}{2}$- — 5 years	111	69.38	
$5\frac{1}{2}$- — 10 years	18	11.25	
11- — 15 years	2	1.25	
16- — 20 years	1	0.62	
21- — 25 years	1	0.62	
Total	160	100.00	

Table-8. Duration of marriage after which the subjects reported for the investigation of sterility.

Summery

160 male subjects of primary sterility were investigated in Tripoli, Libya. By routine semen analysis it was found that 37.50% (60) were normospermic, 37.50% (60) were Oligospermic, 7.50% (12) were necrospermic and 17.50% (28) were azoospermic. 62.50% (100) subjects had abnormal findings and 25.0% (40) showed definite cause of non-fecundity. 46.87% (75) reported for investigation within 2 years of marriage and 86.26% (138) reported within 5 years. Polygamy due to sterity was very low, only 10% (16) married second wife.

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"Mothers shall suckle their children for two whole years . . ."

—Al Qur'an 2:233

Though Al-Qur'an advocated mothers milk for children upto two years, the modern world for centuries preferred bottle feed. It is however a correct realisation of the modern west that mother's milk is the best. The realisation of Qur'anic truth though late is commendable.