

Male Factor Infertility and Semen Analysis among Infertile Male Subjects

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Abstract

Background: The prevalence of infertility in the general population is 15% -20%, of this the male factor is responsible for 20%-40%. Semen analysis is an indispensable diagnostic tool in the evaluation of male partner of infertile couple. Every single couple out of 10 is in search of medical care because of infertility. Men older than 40 years and Women older than 30 years are at an increased risk of infertility. So objective of the present study was to see the different risk factors and sperm count of male infertility.

Materials and methods: Current cross sectional observational study is design to figure out existence, problems and causes, associated with male infertility among 120 male subjects done during two years study period from January 2018 to December 2020 in a Tertiary Medical College and some private chambers of Bangladesh. After consent different health data were recorded and semen analysis was done For this purpose, survey has been conducted at different private hospitals and private chambers were selected for further studies. Semen sample were analyzed by manual method. Ethical clearance was taken from the hospital authorities to conduct the study

Results: Among 120 subjects 76(63.3%) subjects was at age group 31-40 years and 44(36.7%) was at age group 41-50 years. Different occupations of the study subjects revealed 42(35.0%) were banker, 37(30%) were doing business and 41(34.2%) were involved in other services. Regarding different comorbidities, HTN was present in 18(15%), 3(2.5%) had bronchial asthma, 3(2.5%) had DM, 3(2.5%) had HTN with DM and 90(75%) had none and 54(45%) were smoker. Sperm analysis revealed 50(41.7%) had asthenozoospermia, 12(10%) had Asthenozoospermia +Teratospermia, 16 (13.3%) had oligospermia, 17(14.2%) had Oligospermia+ Asthenozoospermia 8(6.7%) had Oligospermia +Teratospermia and 17(14.2%) had teratospermia. Sperm count among the subjects revealed 23(19.2%) had <10 million/ml, 18(15%)

had 11-20 million/ml, 18(15%) had 21-30 million/ml, 15(12.5%) had 31-40 million/ml, 9(7.5%) had 41-50 million/ml, 13(10.8%) had 51-60 million/ml and 24(20%) had >60 million/ml.

Conclusion: It is concluded that male infertility is independent on the age factor but excessive use of tobacco, sedentary life style like Banking, stress or psychological disturbances might provoke issues of infertility.

Key words: Diagnosis; Infertility; Male; Semen analysis.

Introduction

Parenthood is a fundamental human need. The urge to reproduce is virtually universal. Every human being has a desire to become a parent and look after his or her children. The very desire for parenthood is a step in the direction of creating a family.¹ In about half of couples experiencing infertility, there is a male factor which either contributes to or is responsible for their subfertility.

Fertility or the ability to produce children has a positive social value whereas, infertility has a negative social value. Family and society look down couple who is not able to bear children within a reasonable period of time following marriage. Another reason for so much importance being attached to the social aspect of fertility behaviour is that family name will not be carried forward without a child.² Today fertility and infertility have both emerged equally problematic in the world population context. Most fertile couples around 90% should get pregnancy within a year of regular intercourse. This rises to 95% over a two-year period.³

Infertility affects 15% of couples and it is estimated that half of those couples who attend infertility clinics will be successful but equally about half do not get the baby they seek. Between 80-90% of couples who will get a pregnancy without assistance succeed within the first year of unprotected intercourse and about 95% within 2 years.⁴ The problem of infertility has troubled mankind since ages. It is not easy to be certain when the first references to infertility appeared in the literature or in art. The story is told in the first chapter of the first book of Samuel of Hew

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Hannah who was childless, prayed silently and tearfully in the house of the Lord for the gift of a child. She explained to him her great need and she vowed that, if she would have a child, she would give the child to the hard to serve him all his life.^{5,6,7}

Men are most likely to be infertile, if they had sperm counts below 13.5 million, less than 32% sperm motility, fewer than 9% of sperm had a normal appearance. About 15% of couples had more than one cause for their infertility. It is therefore, important to make complete investigations from the outset rather than focusing treatment on the first cause identified.^{8,9}

Reproduction is a simple and natural experience for most couples. However, for some couples it is very difficult to conceive. Infertility is defined as a failure to conceive within one or more years of regular unprotected intercourse. Male infertility is diagnosed when, after testing of both partners, reproductive problems have been found in the male partner.^{10,11} So the objectives of the presents study was to analyze the male infertility and semen analysis among 100 infertile male subjects.

Materials and methods

Present study was conducted among 120 male subjects who had history of infertility. The study includes male partner of infertile couples who are- having either primary or secondary infertility, residing at Chattogram, willing to participate in the study, available at the time of data collection, able to read and write Bengali or English, falling in the age group of 20-50 years and living with the spouse. The study excludes infertile couples who are having marital life of less than one year, not available at the time of data collection. With informed written consent and maintaining proper procedure semen was collected and counted with one hour. Other information were also collected. Data were compiled and analyzed by SPSS-20. Necessary permission was obtained from hospital authorities.

Semen was collected in the laboratory after 3–5 days of sexual abstinence by masturbation into a sterile plastic specimen container in the clinic. Samples were processed within 15 min of arrival (No more than 60 min from the time of ejaculation). Semen was transferred into a 15 ml sterile tube containing a gradient consisting of 2 ml

45% and 2 ml 80% salinized silica (Gynotech, Malden, Netherlands) and centrifuged for 30 min at 400 g. Following a 6-min centrifugation at 300 g, the supernatant was removed, and the pellet was resuspended in 0.4 ml of Sperm Wash Medium.

Results

Table I Age group of the study subjects

	Frequency	Percent (%)
31-40 years	76	63.3
41-50 years	44	36.7
Total	120	100.0

Table I showing 76(63.3%) subjects was at age group 31-40 years and 44(36.7%) was at age group 41 50 years.

Table II Occupation of the study subjects

Profession	Frequency	Percent (%)
Bank	42	35.0
Business	37	30.8
Other Service	41	34.2
Total	120	100.0

Table II showing different occupations of the study subjects where 42(35.0%) were banker, 37(30%) were doing business and 41(34.2%) were involved in other services.

Table III Comorbidities of the study subjects

	Frequency	Percent
Bronchial . Asthma	3	2.5
DM	3	2.5
HTN	18	15.0
HTN+DM	3	2.5
No comorbidities	90	75.0
Urinary Incontinence	3	2.5
Total	120	100.0

Table III showing different comorbidities where HTN was present in 18(15%), 3(2.5%) had bronchial asthma, 3(2.5%) had DM, 3(2.5%) had HTN with DM and 90(75%) had none.

Table IV Smoking history of the study subjects

	Frequency	Percent (%)
No	66	55.0
Yes	54	45.0
Total	120	100.0

Table IV showing 54(45%) were smoker.

Table V Types of Abnormality

	Frequency	Percent (%)
Asthenozoospermia	50	41.7
Asthenozoospermia +Teratospermia	12	10.0
Oligospermia	16	13.3
Oligospermia+Asthenozoospermia	17	14.2
Oligospermia+Teratospermia	8	6.7
Teratospermia	17	14.2
Total	120	100.0

Table V showing 50(41.7%) had asthenozoospermia, 12(10%) had Asthenozoospermia +Teratospermia, 16 (13.3%) had oligospermia, 17(14.2%) had Oligospermia+Asthenozoospermia 8(6.7%) had Oligospermia+Teratospermia and 17(14.2%) had teratospermia.

Table VI Sperm count grading

	Frequency	Percent (%)
<10 million/ml	23	19.2
11-20 million/ml	18	15.0
21-30 million/ml	18	15.0
31-40 million/ml	15	12.5
41-50 million/ml	9	7.5
51-60 million/ml	13	10.8
>61 million/ml	24	20.0
Total	120	100.0

Table VI showing different sperm count among the subjects where 23(19.2%) had <10 million/ml, 18(15%) had 11-20 million/ml, 18(15%) had 21-30 million/ml, 15(12.5%) had 31-40 million/ml, 9(7.5%) had 41-50 million/ml, 13(10.8%) had 51-60 million/ml and 24(20%) had >60 million/ml.

Discussion

The term 'infertility' is defined as the inability to conceive despite regular and unprotected intercourse for one year. The incidence of infertility was reported to be 8-12% worldwide. About 15% of couple will be having more than one cause for their infertility. In about 25% of couples no definite cause will be found even after complete investigation.

In the present study among 120 subjects 76(63.3%) subjects was at age group 31-40 years and 44(36.7%) was at age group 41-50 years. The reason for high percentage of the male in the higher age group of >31 years might be due to the reasons such as late marriages, decision to postpone child bearing. This also shows that a couple's fertility behaviour declines after 30 years of age.

Different occupations of the study subjects revealed 42(35.0%) were banker, 37(30%) were doing business and 41(34.2%) were involved in other services. That means all male partners are educated. This reveals that education level of the respondents is one of the important variable in influencing the behaviour of the individual. The knowledge acquired will have tremendous effect on their health behaviour.

Regarding different comorbidities HTN was present in 18(15%), 3(2.5%) had bronchial asthma, 3(2.5%) had DM, 3(2.5%) had HTN with DM and 90(75%) had none and 54(45%) were smoker. The adverse effects of smoking on male fertility are well documented.⁶ Smoking is reported to cause Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) dysfunction in the airway, and is also associated with pancreatitis, male infertility, and cachexia, features characteristic of CF and suggestive of an etiological role for CFTR.⁷

Sperm analysis revealed 50(41.7%) had asthenozoospermia, 12(10%) had Asthenozoospermia +Teratospermia, 16 (13.3%) had oligospermia, 17(14.2%) had Oligospermia+ Asthenozoospermia 8(6.7%) had Oligospermia +Teratospermia and 17(14.2%) had teratospermia. However, WHO guidelines reported that the man with a sperm count of <20 millions/ml is considered as oligospermia and nearly 100 million man around the world are surviving with erectile dysfunction.¹²⁻¹⁴ Multi centre survey based study was done by the World Health Organization found from 1982 to 1985 where they described 20% cases dominantly related to male partner, and 38% were females where as total abnormalities of infertility was found to be 27% in both male and female whereas the last 15% cases of infertility were undiagnosed or unidentified.^{15,16}

Sperm count among the subjects revealed 23(19.2%) had <10 million/ml, 18(15%) had 11-20 million/ml, 18(15%) had 21-30 million/ml, 15(12.5%) had 31-40 million/ml, 9(7.5%) had 41-50 million/ml, 13(10.8%) had 51-60 million/ml and 24(20%) had >60 million/ml. Persistent azoospermia is incompatible with fertility.^{17,18} Whilst oligospermia is a poor prognostic feature, and the lower the count the worse the prognosis, it is not totally incompatible with fertility.

Limitations

Small sample size with absence of long term followup.

Conclusions

Results revealed that most of the patients are in the middle of their ages reported infertile. Semen analysis remains a significant contribution in the overall diagnosis of infertility in our environment & semen analysis is an indispensable diagnostic tool in the evaluation of the male partner of infertile couple. There are different risk factors. The infertile persons/patients have co-morbid history of diabetes mellitus, genitourinary trauma and infections. Evaluation of the study on infertility by Kruger's strict morphology test revealed that maximum of the men having insignificant infertility issues whereas others were observed significant infertility issues.

Recommendations

Further studies should be carried out involving large number of participants in multiple centres to improve success of male factor infertility treatment.

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Contribution of authors

NBH-Conception, design, acquisition of data, drafting & final approval.

AZZ-Data analysis, interpretation data, critical revision & final approval.

Disclosure

Both the authors declared no competing interest.

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