

Abnormal Semen Parameters among Men in Infertile Couples

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Aims: This study was done to analyze the semen parameters and possible contributing factors among the semen abnormality cases attending the Infertility clinic of Tribhuvan University Teaching Hospital (TUTH).

Methods: Prospective study was conducted in infertility center of TUTH, from March 2007 to July 2011. Detail history of the couple who attended the clinic was taken. Semen analysis after three days abstinence of 630 male partners of infertile couples was analyzed.

Results: In this study, 20 percent of the partners had semen abnormality. Thirty-nine percent had azospermia 47 percent had oligospermia and 14 percent men had asthenormia. Majority of men with semen abnormality were Brahmin followed by Chhetri and Newar. Smoking, alcohol use and vericocele were possible causative factors for the semen abnormality. However, chromosomal abnormality could not be ruled out.

Conclusions: The most common semen abnormality among the male infertility cases was oligospermia and smoking, alcohol intake and vericocele may be contributory factors.

Keywords: asthenospermia, azospermia, male factor of infertility, oligospermia.

INTRODUCTION

Infertility is a global problem. Although the estimates vary, approximately 15% of couples attempting their first pregnancy meet with failure. Male factors are estimated to be the cause in up to 50% of the cases. About 25% of all infertility is caused by a sperm defect and 40-50% of infertility cases have a sperm defect as the main cause, or a contributing cause.¹ If the sperm count or the motility is extremely low, we usually assume this is the cause of the fertility issue. If the count or the motility is slightly low, it could be contributing factor, but the sperm might not be the only fertility issue in the couple. There would often be female fertility problems also.

METHODS

Prospective study was conducted in infertility center of TUTH, from March 2007 to July 2011. Detailed history of the couple who attended the clinic was taken. Both the

partners were examined. Semen analysis of 630 male partners of infertile couples was analyzed. Semen analysis was done after three days abstinence in laboratory of Tribhuvan University teaching Hospital. Semen analysis was done according to WHO criteria. Sperm count below 20 million/ml was considered as oligospermia and below 5 million/ml as severe oligospermia.

RESULTS

Total of 630 couple were included in this analysis.

Table 1. Types of semen parameter abnormalities (n=126).

Semen Analysis	Number (n=126)	Percentage
Azospermia	49	38.9
Oligospermia	59	46.82
Asthenospermia	18	14.28

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Out of 630 new couple investigated for infertility, 126 (20%) male partner had semen abnormalities. Out of 126, 49 (38.9%) husbands had azospermia, 59 (46.82%) husbands were oligospermic and 18 (14.28%) had asthenospermia.

Out of the 59 patients with oligospermia, 11 men had severe oligospermia.

Among the 18 men with asthenospermia seven had oligospermia as well and these seven men were not included in 59 men with oligospermia.

Table 2. Ethnicity and semen parameter abnormalities (n=126).

Caste	Azospermia	Oligospermia	Asthenospermia	Total
Brahmin	13	23	6	42
Chhetri	11	6	4	21
Newar	9	10	4	23
Gurung, Rai, Magar, Sherpa	8	9	3	20
Madheshi	7	9	-	16
Tharu	-	1	1	2
Muslims	1	1	-	2
Total	49	59	18	126

Majority of the patient with male factor of infertility were Brahmin followed by Chhetri and Newar.

Table 3. Correlation of history and examination with abnormal semen analysis findings.

	Azospermia	Oligospermia	Asthenospermia
Trauma to the testis	-	1	-
Hydrocele	1	1	-
Hernia	-	-	-
Mumps orchitis	2	2	-
Heat exposure	1	3	-
Chemical exposure	3	1	-
Smoking	4	3	1
Alcohol	3	2	3
Urethral discharge	-	2	-
Abnormal testis	2	2	1
Vericocele	3	1	2

Among men with azospermia, one had history of hydrocele operation, two had history of mumps during childhood, one was cook working in the kitchen since seven years, three had history of chemical exposure among which

two were exposed to the pesticides and one was working with carpet dye. Similarly, four men were chronic smokers where they used to smoke more than 10 sticks of cigarettes per day. There were three men who used to drink more than once a week who were considered as alcoholics.

Among men with oligospermia, one had history of trauma to the testis. One had hydrocele. In this, two men had history of urethral discharge. Three of the oligospermic patients had history of heat exposure (kitchen workers and truck driver).

In asthenospermia group, significant finding was three men with oligo-asthenospermia were chronic alcohol consumer and two of the men had vericocele. These two were also oligo-asthenospermic.

In this study, among the infertile couples 20% of the couple had semen abnormality. Among them 38.9% had azospermia, 46.82% had oligospermia and 14.28% men had asthenormia.

DISCUSSION

Past medical or surgical history including thyroid or liver disease, diabetic neuropathy or hernia repair (damage to the vas deferens or testicular blood supply) is important. We had four patients who had history of hernia repair; two of them had oligospermia and two had azospermia. None of the men had diabetic neuropathy. But in this study liver dysfunction was not analyzed. However, there were no cases with history of herniorrhaphy.

Male smokers also have approximately 30% higher odds of infertility.¹ There is increasing evidence that the harmful products of tobacco smoking kill sperm cells.² There were no patients with other factors, horse riding, anabolic steroids, cimetidine, spironolactine, nitrofurantoin, which may affect spermatogenesis.³ None of the men had history of exposure to these drugs. Chromosomal abnormalities like Klinefelter syndrome, Y chromosome microdeletions⁴ which affect the male fertility, were not studied in this study. Nutritional, socioeconomic and environmental factors have been attributed to compromise male reproductive health.⁵ These environmental factors were not studied in this study. Surgery, chemotherapy and radiation may affect in spermatogenesis.⁶ There was no case of post radiation infertile male in this series. In this series, there is correlation of male infertility with smoking, alcohol intake, vericocele chemical (pesticide) use, atrophic testis and heat exposure.

CONCLUSIONS

Semen abnormality is one of the main causes of infertility. Oligospermia is most common semen abnormality.

Smoking, alcohol, varicocele, and chemical exposure are possible contributing factors.

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REFERENCES

1. Center for disease control and prevention. Preventing smoking and second hand smoke before, during and after pregnancy. [Online]. 2009 [cited 2013 Mar 20]; Available from: URL: <http://www.cdc.gov/chronicdisease/resources/publications/fact/sheet/smoking.html>
2. Agarwal A, Prabakaran SA, Said TM. Prevention of oxidative stress injury to sperm. *J Androl*. 2005 Nov-Dec;26(6):654-60.
3. Robbins WA, Elashoff DA, Xun L. Effect of lifestyle exposures on sperm aneuploidy. *Cytogenet Genome Res*. 2005;111(3-4):371-7.
4. Emsley J. *Nature's Building Blocks*. UK: Oxford University Press; 2001.
5. Mathur PP, D' Cruz SC. Effect of environmental contaminants on testicular function. *Asian J Androl*. 2011 Jul;13(4):585-91.
6. Holoch P, Wald M. Current options for preservation of fertility in the male. *Fertil Steril*. 2011 Aug;96(2):286-90.