Research Article

Frequency of Sperm abnormalities in patients seeking fertility treatment at Hazara, Pakistan

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Abstract

The occurrence of male infertility is more common than the female infertility. There are several environmental, physical and genetic factors are involved in altering semen quality which leads to infertility problems. The prevalence of sperm associated problems has never been studied previously in Hazara division of the Pakistan. Total 638 men seeking fertility treatment were included in current study. Semen analysis revealed that the 381 (59.71 %) men had normal sperm count, and activity while 257 (40.28) % of the individuals were found to have various abnormalities including Oligospermia, Azoospermia and Necrospermia. Although the studied samples are low to make a generalized conclusion however we conclude that the high number infertile cases may be due to socioeconomic conditions of the patients and consanguineous marriage. Therefore, we suggest that changing life style and improving living conditions can minimize the impact of disease prevalence.

Key words: Semen. Physiology. Oligospermia. Azoospermia. Necrospermia

Introduction

Generally, fertility is an ability to conceive and produce offspring while infertility is the medical condition in which couples failed to conceive after successive unprotected sexual intercourse for more than a year (Chuang et al, 2004; Jones and Decherney, 2005). Worldwide, more than 10 - 15% couples are suffering from infertility either male or female while more than 50% of the infertility is linked with male counterpart (Sharlip et al, 2002; Bently and Mascie-Taylor, 2000; WHO, 1991). The sperm quantity and quality related medical conditions are termed as oligospermia (low sperm count), asthenospermia (Low sperm activity), teratozoospermia (abnormal sperm morphology) and azoospermia (absence of sperm in semen) (Egoczue et al, 2006; Hargreave et al, 2006; Brugh and Lipshultz, 2004). A number of factors are involved in male infertility, specially associated with sperm quality and quantity including, smoking, high temperature, physical activities, exposure to radiation and chemicals, mental and physical stress like war and natural disasters (Abu-Musa et al., 2007; Fukuda et al., 1996; Evans et al., 1981; Hopkins et al., 2001; Schettler et al., 1999; Ten et al., 2008). DNA damage
due to factors like oxidative DNA damage (Gharagozloo and Aitken, 2011), smoking (Zenzes, 2000), other xenobiotic DNA damaging agents (drugs or chemotherapy) (Mozdarani and Pellestor, 2011) reactive oxygen species and fever or high testicular temperature (Imam and Dada, 2011) are also responsible for male infertility.

Infertility is one of the common medical problem of the Pakistani individuals. The reasons for infertility could be poor living conditions, improper and impure diet, low quality drinking water, and high number of consanguineous marriages. Here, we aimed to study the statistics of infertile males in Hazara, Pakistan and bring awareness into the community for prevention and control of the male infertility.

**Materials and Methodology**

Total 638 men were collected who consulted fertility clinics in Hazara divisions of Pakistan. All recruited individuals did not conceive two years of continuous intercourse with their wives. Informed written consents were obtained from all percipients and ethical approval was obtained from ethical review committee and advance research board of Hazara University, Mansehra, Pakistan. Each individual was asked about their job, food habits, and course of drinking water, family history and parental relation. Semen samples were collected from volunteers for examination of sperm quantity and quality.

Collected samples were incubated at 37°C for 30 minutes in a water bath then microscopic examination was performed for detecting possible sperm abnormalities.

**Results**

The analysis of samples revealed that 381/638(59.71%) individuals had normal semen and total 256/638 showed various abnormalities in semen, 170/256 (66.14%) with low sperm count than 15 million/ml (Oligo-spermia), No sperm (Azoospermia) was observed in 78/256 (30.35%) individuals and 9/256 (3.50%) patients were found to have immotile/dead sperm (Necrospermia) in semen (Table 1).

**Table 1. Semen analysis of the collected individuals**

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Semen quality</th>
<th>Samples Analyzed</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal sperm conditions</td>
<td>381/638</td>
<td>59.71</td>
</tr>
<tr>
<td>2</td>
<td>Abnormal sperm conditions</td>
<td>257/638</td>
<td>40.28</td>
</tr>
<tr>
<td>3</td>
<td>Oligospermia</td>
<td>170/257</td>
<td>66.14</td>
</tr>
<tr>
<td>4</td>
<td>Azoospermia</td>
<td>78/257</td>
<td>30.35</td>
</tr>
<tr>
<td>5</td>
<td>Necrospermia</td>
<td>9/257</td>
<td>3.50</td>
</tr>
</tbody>
</table>

**Discussion**

For fertilization equal contribution from both male and female counterpart is necessary but in case of failure in conception male has higher role. For sperm activity and survival 1-2 degree low than the body temperature is required. Higher temperature may affect sperm activity, morphology or even cause death. Testicular injury, brain injury, radiations, chemical exposure and stress etc. cause sperm abnormalities. Due to socioeconomic conditions, environmental factors and genetic factor the frequency of sperm abnormalities would be different in different regions of the world. Even Pakistan has
different demographic features in populations so every region would have difference in infertility occurrence. In current study, we found such a higher number of male infertility ratio in Hazara, population. The most probably reason for sperm abnormalities is high number of consanguineous marriages. There are also several other factors may involve in infertility, like mental stress due socioeconomic factors, poor quality of drinking water, improper food and smoking etc. Previous study has shown an association between the active smoking and altered sperm parameters including abnormally shaped sperms. (Evans et al., 1981). Chemotherapy a possible cause of male infertility (Mozdarani and Pellestor, 2011), Normal mental health is important for normal fertility sperm quality in Lebanese men pre and post-civil war showed significant difference, higher sperm abnormalities were found in post war subjects (Abu-Musa et al., 2007). Environmental pollutants are one of the possible causes of male infertility (Ten et al., 2008). But according to our information and interviews analysis with patients, the risk of environmental pollutants across the Hazara, Pakistan is very little because this region is one of healthy place of Pakistan, mostly free from industrial areas and most of people live in villages. The possible risk factors, those we highly associate to above mentioned semen’s abnormalities among the men of Hazara, Pakistan are smoking and emotional stress. Because most of people in this area are active smokers. Emotional stress inflation in across the Pakistani is very high due to terrorism and other many socio-economics factors: These two are the main causes emotional stress.

We highly recommend to avoid smoking and bring into notice to government of Pakistan and non-governmental organizations to get into bottom the reasons that cause emotional stress in Pakistan. Furthermore, there is also critical need to bring the awareness among the people about the dark aspects of consanguineous marriages. Here, we also encouraged to conduct similar studies in other regions of Pakistan and worldwide to find out statistics of infertile males as well as risk factors of male infertility.

**Conflict of Interest**

Authors have declared that they have no conflict of interest.

**Acknowledgment**

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**References:**


