

# Pattern of semen analysis of male partners of infertile couples at the University College Hospital, Ibadan

\*R. A. Adeniji, O. Olayemi, M. A. Okunlola and C. O. Aimakhu

Department of Obstetrics and Gynaecology, University College Hospital,

P. M. B. 5116, Ibadan, Nigeria.

## Summary

### Objectives

To evaluate the seminal patterns of the male partners of the infertile couples, towards identifying the possible contribution of the male factors to overall infertility problem in our environment.

### Methodology

The study is a descriptive analysis of the seminal patterns of the partners of the infertile couples, who presented at the Fertility Research Unit (a WHO collaborating centre) of the Department of Obstetrics and Gynaecology, University College Hospital, Ibadan, Nigeria, between 1st January 1990 and 31st December, 1999.

### Results

Result of the seminal analysis of 824 male partners of infertile couples were retrieved for the study, of which 598 (73%) were referred for secondary infertility.

Overall, 225 (27.3%) of these subjects had abnormal semen analyses, with Asthenozoospermia being the most common (27.8%) of the disorders observed. Fifty-four (6.7%) subjects of the study population had Azoospermia,

The most common multiple factors abnormality in the study population was Astheno/Oligozoospermia (25.5%), while three factors defect - Oligo/Astheno/Teratozoospermia was noticed in 106 (13.1%) of the subjects.

### Conclusion

Abnormal semen quality remains a significant contribution to overall infertility in our environment and Asthenozoospermia is the most common seminal quality abnormality.

**Keywords:** Seminal analysis, Male partners, Infertile couples

## Résumé

### Objectifs

Évaluer les tendances seminales des partenaires des hommes chez des couples mariés stériles afin d'identifier des raisons possibles pour des facteurs des hommes attribuables aux problèmes globaux de la stérilité dans notre milieu.

### Méthodologie

Il s'agit d'une étude basée sur une analyse descriptive de la tendance seminale des partenaires des couples mariés stériles qui ont recours à un spécialiste du service des Recherches sur la fécondité (un centre collaboratoire d'OMS) du Département de l'obstétrique et de la gynécologie, collège Hospitalo Universitaire, Ibadan, Nigeria, le premier janvier 1990 et le 31 décembre 1999.

### Résultats

Des résultats de l'analyse seminale de 824 partenaires des hommes des couples mariés stériles ont été obtenus pour cet étude parmi lequel 598 soit 73% ont été envoyés pour la stérilité secondaire.

Dans l'ensemble, 225 soit 27,3% de ces sujets avaient une analyse du sperme anormal, avec l'asthenoïcozoospermie étant la plus fréquente (27,8%) des desordres étudiés.

Cinquante quatre soit 6,7% des patients étudiés avaient l'azoospermie.

Les facteurs multiple des caractère anormal le plus fréquent chez la population étudiée était l'astheno/oligozoospermie 25,5% tandis que des défauts de trios facteurs Oligo/astheno. Teratozoospermie ont été observés chez 106 soit 13,1% des sujets.

## Conclusion

La qualité du sperme anomal demeure une contribution importante per rapport à l'ensemble de la stérilité dans notre milieu et l'asthenoïcozoospermie est la plus fréquente de la qualité seminale d'un caractère anormal.

## Introduction

Infertility defines as inability to achieve conception in a period of 1 year in a couple, despite regular and adequate unprotected sexual intercourse.<sup>1</sup> It remains a very sensitive issue in our environment and in Nigeria culture, remains a social stigma.<sup>2</sup> This accounts for great percentage of marital instability, social neglect and economic deprivation with the female partners being the more adversely affected particularly in term of emotional stress and unhappiness.<sup>3,4</sup>

In these relationship, rarely will the male partners believe they could be responsible, as often times, sexual potency is erroneously equated with fertility.<sup>5,6</sup>

In sub-Saharan Africa, the prevalence of infertility is estimated at 30%<sup>6</sup> Earlier studies in this environment showed that poor semen quality accounted for 20 - 40% of male infertility<sup>5,7,8,9,10</sup> and 36 - 50% of male attending infertility clinics are subfertile.<sup>5</sup> Furthermore, the World Fertility Survey (1985) indicated that the proportion of infertile males in sub-Saharan Africa with secondary infertility is higher than those with primary infertility.<sup>11</sup>

In this regards, semen analysis is an indispensable diagnostic tool in the evaluation of fertility potential of the male partners of infertile couples. Careful evaluation of the ejaculate parameters may suggest the possible cause(s) of the infertility and therapy, where such exist, appropriately instituted.

Recent, Worldwide reports suggest a decline in semen quality in man.<sup>12,13</sup> This study aims to assess the semen quality in our environment, especially to evaluate the seminal pattern of the male partners of infertile couples, towards identifying the possible contribution of male factor to overall infertility in our environment.

## Materials and Methods

This study is a descriptive analysis of seminal fluid patterns of the male partners of infertile couples who presented at the Fertility Research Unit (a WHO Collaborating Centre) of the Department of Obstetrics and Gynaecology, University College Hospital, Ibadan, between January 1st 1999 and December 31st 1999. Only subjects whose female partners were being investigated for infertility were included in the study. Eight hundred and twenty-four (824) subjects submitted seminal fluids for analysis in the study period. The subjects were required to abstain from sexual intercourse for 3 days (as recommended by WHO) before semen collection.

Semen samples were collected in sterile universal plastic containers preferably by masturbation, but in some cases by coitus interruptus (after due counselling). The samples were delivered within 1 hour of collection and analysed by manual method. Analyses were for volume, viscosity, sperm concentration, motility, mean progressive motility and morphology, according to WHO guidelines on semen analysis.<sup>14</sup>

Azoospermia refers to absence of spermatozoa in the ejaculate. Oligozoospermia refers to spermatozoa concentration less than 20million per millilitre while Asthenozoospermia signifies that less than 50% of the spermatozoa are motile and Teratozoospermia refers to situation where less than 30% of the spermatozoa have normal

\* Correspondence

morphology. The proportion of each abnormality and observed combined defects were subjected to frequency distribution on the Epi info 6 versions 6.04b package.

### Results

A total of 824 male partners of infertile couples were investigated at the laboratory in the study period.

Two hundred and twenty-six subjects (27%) were referred on account of primary infertility (never achieved conception with a woman irrespective of outcome) while five hundred and ninety-eight subjects (73%) were being investigated for secondary infertility (had previously impregnated a woman).

**Table 1 Semen characteristics of male partners in infertile couple**

Semen quality	No	%
Abnormal	225	27.3
Normal	599	72.7
Total	824	100

**Table 2 Classification of semen abnormalities**

Types of abnormality	No	%
Azoospermia	54	6.7
Oligozoospermia	153	18.9
Asthenozoospermia	225	27.8
Teratozoospermia	53	6.5

*N. B. Many subjects have multiple semen abnormalities.*

Table 1 shows semen characteristics of the subjects. Two hundred and twenty-five (27.3%) of the men investigated had abnormal semen analysis results and the remaining five hundred and ninety-nine (72.7%) were adjudged normal. Motility abnormalities (Asthenozoospermia) were the most common disorder among the study population with 27.8% in this category. Fifty-four (6.7%) subjects of the men with abnormal seminal analyses were azoospermic as demonstrated in Table 2. Most subjects with abnormal seminogram had multiple factors abnormalities. Astheno/Oligozoospermia was observed in Two hundred and six subjects (25.5%), while fifty-seven subjects (7.1%) had Oligo/Teratozoospermia. Oligo/Astheno/Teratozoospermia was reported in One hundred and six subjects (13.1%).

**Table 3 Proportion of multiple factor abnormalities defects**

Types of defect	No	%
Astheno/Oligozoospermia	206	25.5
Oligo/Teratozoospermia	57	7.1
Astheno/Teratozoospermia	103	12.8
Oligo/Astheno/Teratozoospermia	106	13.1

Leucocytosis of 3 pluses, which corresponded in our laboratory to >5 Leucocytes per high power field were found in 15 men (1.9%). Other round cells in excess of 5 per high power field were found in 115 (14.2%) of the subjects.

### Discussion

The results of this study showed that about 3 out of every 10 male partners in infertile relationship have abnormal semen quality (27.3%). Poor motility (Asthenozoospermia) and low sperm density (Oligozoospermia) were the two most common abnormalities demonstrated in this study with the corresponding rates of 27.8% and 18.9% respectively. Various parameters may be abnormal, but compromises of spermatogenesis that result in decrease in density, motility or fertilizing capability of spermatozoa are much harder to define. This is because of surprising fertility of some men with poor counts and variation that occurs even in normal fertile men.<sup>1</sup> Sperm concentration is clearly a major characteristic related to the occurrence of conception. However, low sperm concentrations were shown to exist in couples with "fertile" male

partner,<sup>15</sup> but it is valuable in defining sterility. However, a male factor associated with azoospermia unquestionably reduces the cumulative conception rate to zero.

Of the primary parameters of semen analysis, motility has a much stronger relationship to both percentage of pregnancy and conception rate when compared to sperm concentration.<sup>16</sup> Some factor however have been noticed to have effect on quality of semen. These are frequency of sexual intercourse and method of semen collection. Prolonged abstinence is associated with increase sperm concentration, while shorter period, though may improve motility, can lead to low sperm density.<sup>17</sup>

Seminal specimen preferably should be collected by masturbation. Unsatisfactory results had been associated with some specimens collected by coitus interruptus or other means associated with spillage of the "split ejaculate" - the first and the richest portion of the semen. Where a result is reported abnormal, a repeat test after waiting a period of at least 2 - 3 weeks is recommended to confirm the abnormality.<sup>1</sup>

Amongst the subjects in this study with abnormal seminogram, two-factor abnormality - Astheno/Oligozoospermia were recorded in 25.5% of the subjects, while three-factor abnormality - Oligo/Astheno/teratozoospermia was reported in 13.1% of the subjects. These figures though comparable, were marginally higher than reports (11.7% and 11.7%) from Jos by Imade et al.<sup>18</sup> A guide to prognosis however, is that a one-factor abnormality is associated with a better prognosis than a two-factor, which in turn is better than a three-factor abnormality.<sup>19</sup>

However, with newer technologies and advances in assisted reproduction, pregnancy can now be accomplished in area where it was previously thought impossible.<sup>1, 18, 20</sup>

In this study 15(1.9%) and 115 (14.2%) of the subjects had significant presence of leucocytes and other round cells respectively in their semen. While incontrovertible evidences exists as to the damaging effect of infections especially sexually transmitted disease on both the testis and its accessory organs, leading to post-inflammatory obstruction or secretion of toxins which alter spermatozoal characteristics and consequently may cause infertility.<sup>21, 22</sup> There is however poor correlation of the presence of leucocytes or round cells and presence of infection in the semen, due to low specificity.<sup>2</sup> Because our laboratory does not offer microbiological services, the data available excluded semen culture. Consequently, the significance of these findings could not be established in this study.

This study has further buttressed the historical observation that higher percentage of infertile males in this environment has secondary infertility.<sup>23</sup> Seven-three percent (73%) of the subject in this study presented for secondary infertility, which is higher than the findings (54%) at Ife.<sup>24</sup> The factors for and the implication(s) of this trend need to be further explored.

### Conclusion

This study had demonstrated that abnormal semen quality is a major factor in our environment with 27.3% of male partners of infertile couples having abnormal semen parameters and the most common single abnormality is poor motility (Asthenozoospermia) while the most common multiple - factor/combined defects is the two-factor abnormality of poor motility and low sperm concentration (Astheno/Oligozoospermia).

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