

## **SEMINAL FLUID INDICES OF MALE PARTNERS OF INFERTILE COUPLES IN UYO, NIGERIA.**

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### **ABSTRACT**

This retrospective study analyzes the seminal fluid indices of 633 male partners of infertile couples at the University of Uyo Teaching Hospital over a four year period. All the laboratory records on seminal fluid analysis between 1<sup>st</sup> January 2003 and 31<sup>st</sup> December 2006 were reviewed. The seminal fluid characteristics of the patients were determined and the abnormalities classified according to the World health organisation guidelines. Five hundred (79.0%) of the men had abnormal seminal fluid parameters. About 56.0% of the subjects were asthenozoospermic, 38.9% were oligozoospermic, 2.8% had teratozoospermia while 7.0% had azoospermia. The significant contribution of the male factor to infertility in our environment is highlighted. The need for the encouragement of male partners of infertile couples to avail themselves for proper infertility evaluation and the advantages of early detection and treatment of sexually transmitted infections in men is stressed.

**KEY WORDS:** Male infertility, seminal fluid indices, Uyo

### **INTRODUCTION**

In sub-Saharan Africa, infertility still remains a major disaster for couples and a serious social and reproductive health problem (Okonofua, 1999, Abasiattai et al 2007). Several studies continue to demonstrate high rates of infertility in many countries in the sub-region that exceed those of other parts of the world (Okonofua, 1999). In Nigeria, large family size which is seen as an insurance cover for parents against old age and disability and also as a veritable means of perpetuating the name of the family is the norm (Idrisa and Ojiyi, 2000). Thus, childlessness is a dreaded outcome of any marriage and often leads to polygamy, altered self esteem, impairment of sexuality, intense emotional stress, grief, depression and even frank psychiatric disturbance (John and Udoma 1999, Komolafe et al 2005).

Traditionally in most African societies, women often bear the burden of infertility as they are usually blamed as the sole source of the problem. Several reports have shown that

Nigerian men are increasingly insisting on a girl's proven fertility before making any marital vows (Ekanem and Ekanem 2006). However, there is increasing awareness of the role of the male factor in infertility in Nigeria as they are now known to contribute significantly to the problem (Idrisa et al 2001). Available evidence indicates that in Nigeria, the male factor is responsible for up to 30-50% of cases and this rate appears to be rising (Arowojolu et al 2003, Esimai et al 2002).

The main determinants of the reproductive potential of the male are the quantity and quality of spermatozoa ejaculated during coitus (Emokpae et al 2007). Hence, semen analysis remains the most important single test in evaluating the male factor in infertility (Ibekwe and Attah 2006, Idrisa et al 2001). A properly performed semen analysis provides a wide spectrum of information reflecting the spermatogenetic and steroidogenetic functions of the testis and also the integrity of the male genital tract (Ibekwe and Attah 2006). This may lead to identification of the probable cause(s) of the

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infertility and appropriate therapy where such exist, instituted.

The University of Uyo Teaching hospital, Uyo, is a newly established teaching hospital and the only health facility that offers tertiary health care services to the people of Akwa Ibom state in the south-south geo-political zone of Nigeria. Due to paucity of data on male infertility in Akwa Ibom state, this study was undertaken to analyse the seminal fluid indices of male partners of infertile couples in our center.

## MATERIALS AND METHODS

This retrospective study was carried out at the University of Uyo Teaching Hospital, Uyo. The laboratory records of all male patients whose partners presented at the gynaecological clinic for investigation and possible treatment for infertility between 1<sup>st</sup> January 2003 and 31<sup>ST</sup> December 2006 were obtained from the microbiological laboratory for detailed study. The seminal fluid characteristics that were determined and their percentages calculated were the total seminal fluid volume, the sperm concentration, sperm motility and morphology. The various forms of semen abnormalities were then classified according to the world health organization (WHO) guidelines (WHO 1999). Thus, Aspermia refers to absence of an ejaculate. Azoospermia refers to the complete

absence of spermatozoa in the ejaculate. Oligozoospermia refers to spermatozoa concentration less than 20 million per millilitre (ml) while less than 5 million per ml represents severe oligozoospermia. Asthenozoospermia implies that less than 50% of spermatozoa are progressively motile while teratozoospermia refers to a situation where less than 30% of the sperm have normal morphology. The data were analysed using tables and percentages and the results obtained formed the basis of the discussion.

## RESULTS

During the period of study, six hundred and thirty three men had their semen analysed in the microbiological laboratory. Five hundred (79.0%) of the men had abnormal semen analysis results while 133 (21.0%) were adjudged normal.

There was no recorded case of aspermia. About 69.8% of the subjects had normal seminal fluid volume. Three hundred and forty three men (54.2%) had normal sperm concentration while 246 (38.9%) had oligozoospermia. Forty-four men (7.0%) were azoospermic, 355 (56.0%) had asthenozoospermia while 18 (2.8%) had teratozoospermia (table I).

**Table I: Classification of semen abnormalities**

N=633

Variable	No (%)
<b>Semen volume</b>	
Aspermia	-
<2ml	191 (30.2)
> 2ml	442 (69.8)
<b>Sperm concentration</b>	
Normal	343 (54.2)
Oligozoospermia	121 (19.1)
Severe oligozoospermia	125 (19.7)
Azoospermia	44 (7.0)
<b>Sperm motility</b>	
Normal	234 (37.0)
Asthenozoospermia	355 (56.0)
Azoospermia	44 (7.0)
<b>Sperm morphology</b>	
Normal	571 (90.2)
Teratozoospermia	18 (2.8)
Azoospermia	44 (7.0)

## DISCUSSION

This study shows that poor semen quality is a major contributor to infertility in our environment as seven out of every ten male partners of infertile couples had some form of seminal fluid abnormality. This rate of semen abnormalities which is higher than those reported from other centers (Idrisa et al 2001, Esimai et al 2002, Adeniji et al 2003) may not be entirely representative of what obtains in our environment as Nigerian men are usually uncooperative and very reluctant to subject themselves for evaluation believing that fertility failure management is the sole responsibility of the female (Anate and Akeredolu 1994, Olatunji and Sule-Odu 2003).

Asthenozoospermia was the most common seminal fluid abnormality detected in this study. This is in contrast to what obtains in most other Nigerian centers where abnormalities in sperm concentration are more common (Ibekwe and Attah 2006, Imade et al 2000, Idrisa et al 2001). Sperm motility is one of the most important parameters in semen analysis and has a strong relationship to both percentage of pregnancies and conception rates (Ibekwe and Attah 2006, Olatunji and Sule-Odu 2003). For the critical process of fertilization, emphasis is now shifting to motility instead of sperm density; few sperm cells may be required but they must be actively motile (Aitken et al 1982).

Oligozoospermia was the next most common abnormality detected. This has been reported to be the most common sperm defect in Nigeria (Obiechina et al 2002). Though majority of the cases of poor sperm quality are idiopathic, available evidence indicates that in sub-Saharan Africa; sexually transmitted infections (STIs) are the most common identifiable cause (Okonofua 2003). These STIs particularly those following *Neisseria gonorrhoea* and *Chlamydia trachomatis* are highly prevalent in the sub-region and cause chronic seminal vesiculitis and chronic epididymo-orchitis (Idrisa et al 2001). Other factors that are reported to contribute to poor semen quality include duration of abstinence from sexual intercourse, method of collection of semen, mumps orchitis, varicoceles, herniorrhaphy, hydrocelectomy, presence of antiserum antibodies, genetic abnormalities, exposure to environmental pollutants and testicular injury (Idrisa et al 2001). WHO guidelines recommend abstinence from sexual intercourse for three days before a semen

sample is collected preferable by masturbation. Longer periods of abstinence may result in poor sperm motility and morphology while shorter periods may lead to impaired motility (Rowe et al 1996). In addition, spillage of the first portion of the semen during collection can drastically reduce the sperm count and thus quality of semen.

Severe oligozoospermia and azoospermia were responsible for about 26.7% of the cases. These are usually either due to testicular failure or obstruction of the seminiferous tubules or efferent ductules (Idrisa et al 2001). Male factors associated with azoospermia or severe oligozoospermia unquestionably reduces the spontaneous cumulative conception rate to zero. Whereas 13 years ago, the use of donor sperm was the only option offering a realistic chance of parenting for the azoospermic or severely oligozoospermic male, the development of micromanipulation insemination techniques such as zona drilling (ZD), partial zonal dissection (PZD), subzonal sperm injection (SUZI) and intracytoplasmic sperm injection (ICSI) and the use of surgically retrieved sperm have revolutionised their management (Nicopoullou et al 2005). ICSI which is currently the most widely practised technique has surpassed previous techniques as it overcomes the zona pellucida and the oolemma; both potential barriers to fertilization (Thomas et al 2003). In addition, its introduction has resulted in a substantially higher fertility and implantation rate and it is now used to help couples with severe male factor infertility achieve conception with their own gametes (Van Steirteghem et al 1996, Nicopoullou et al 2005). Unfortunately these new micromanipulation techniques are not only very expensive to obtain but are only available in very few centers in this country.

In conclusion, this study shows that the male factor contributes significantly to infertility in our environment and asthenozoospermia is the most common seminal fluid abnormality. Community enlightenment on the high level of male factor involvement in infertility in our environment, the encouragement of male partners of infertile couples to avail themselves of proper evaluation and the early detection and treatment of STIs, a probable cause of these abnormalities are advocated.

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