

REVISIT OF CURRENT PATTERNS OF SEMEN QUALITY AMONG MALE PARTNERS OF INFERTILE COUPLES SEEN AT THE JOS UNIVERSITY TEACHING HOSPITAL:

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SUMMARY

Background: Infertility is a worldwide problem and the contribution of the male partner is significant. In general one out of seven couples will have problem with fertility.

Materials and Methods: This was a 5 year retrospective study, in which the results of seminal fluid analysis of male partners of infertile couples were retrieved from the Andrology Research Laboratory of the Department of Obstetrics and Gynaecology, Jos University Teaching Hospital/University of Jos between 1999 and 2004. The results were critically analysed for critical days of abstinence, volume of semen collected, methods of collection of semen, the quality of the semen and the presence of pus cells greater than 5 per high power field.

Results: The results showed that majority of the patients (68.2%) abstained from intercourse for 3-4 days, while 17.4% abstained for greater than 7 days.

About 61% of the patients produced semen by coitus interruptus while, 34.3% obtained their samples by masturbation. Majority of the patients (70.1%) produced semen volume of greater than 2mls, while 29.9% produced semen of less than 2mls. Of the total number, 34.7% were normozoospermia while, 65.3% had one semen abnormality or the other. Pus cells were present in a total of 6.6%.

Conclusion: Majority of the men followed the standard protocol for semen production and collection. However, semen abnormalities were

high among partners of infertile couples, which may explain the infertility in those couples. However, in males with normal semen qualities, other factors may be responsible for the infertility.

KEY WORDS: Semen abnormalities, Infertility, semen abnormalities, Jos University Teaching Hospital.

INTRODUCTION:

Infertility in couples is a worldwide problem and the contribution of the male partner to infertility is significant¹.

Numerous articles have suggested that sperm counts are falling and that male fertility is declining. Of the most widely reported was a 1992 paper by Carlson and collaborators that looked back at 61 research papers published since 1938 and concluded that the average sperm count has dropped by 42%².

In Nigeria and other African communities, infertility or reproductive failure is associated with misery, feeling of worthlessness and, a sense of loss, especially among men who believe that their names would be forgotten soon after death^{3,4}. This fear of family name obliteration has led to panicky measures and family stress to the detriment of the society, particularly, the female partner who is usually often blamed erroneously, for the misfortune of the infertile couple^{5,6}.

As a result, the woman is almost always the first member of an infertile couple to be examined and usually more intensely studied⁷.

Furthermore, the paucity of information and the lack of cooperation of some affected men have helped to mask the contribution of male factor to infertility over the years^{8,9}.

In general, 1 out of 7 couples may have problems with fertility¹. The male contribution to infertility among couples worldwide has been estimated to be up to 50%¹⁰.

Studies in the United states of America (USA), Singapore, and Bangladash show that males contribute between 23-30% of infertility in couples,^{11,12,13}

In Africa, male factor infertility is believed to account for about 40-48%^{14,15}. Other studies report 30% in Sub-Saharan African¹⁶. In Nigeria, the male partner's contribution to Sub-fertility is estimated to be about 54% based on semen analysis alone, but when the reproductive potential of the wives are put into consideration, the male contribution is of the order of about 40%¹⁷.

Other studies in Nigeria have shown that male infertility due to poor semen quality accounts for 20-48% of all infertile unions and most of these cases defy conventional methods of treatment^{17,18}.

The causes of abnormal semen quality include idiopathic testicular atrophy, post-gonococcal epididymorchitis, hormonal factors, sexually transmitted infections, and other bacterial infections^{14,15}. Other aetiological factors are previous herniorrhaphy, history of mumps and recent medications²⁰.

Semen analysis is still today a fundamental stage in male infertility evaluation²⁰. Although a semen analysis with normal parameters does not assure male fertility (except in cases of azoospermia) it does not distinguish fertile from infertile patients, but when the quality decreases the pregnancy rate also decreases but rarely touches zero²⁰.

The treatment of male factor infertility is generally recognized as being equally important as that of the female. New technology for treatment has been developed. These new treatment modalities are presently lacking in the developing countries, and where available, are not affordable by the majority of those who need these services. For oligospermia or azoospermia,

these include donor insemination, intracytoplasmic sperm injection (ICSI), and in-vitro fertilization.

These benefits in advanced reproductive technology will take some time before they become available and affordable to developing countries like ours where these facilities are needed the most¹⁹.

AIMS AND OBJECTIVE

To determine the quality of semen in males undergoing investigations for infertility at the Jos University Teaching Hospital.

MATERIALS AND METHOD

The results of seminal fluid analysis of 805 male partners of infertile couples who submitted their semen were retrieved from the Andrology Research Laboratory of The Department of Obstetrics and Gynaecology, Jos University Teaching Hospital, Jos, between August 1999 and July 2004. The periods of abstinence, methods of collection of semen, volume of semen, results of semen quality and presence of pus cells greater than 5 per High Power Field were retrieved from the results sheets and analyzed. An experienced Laboratory Scientist who used the standard WHO guidelines for semen analysis^{21,22} performed the analysis of the semen.

RESULTS:

A total of 805 seminal fluid analysis results of male partners of infertile couples were analyzed. Of these, 34.7 %(279) of the patients had normal semen quality while 65.3 %(526) had abnormal semen.

Table 1 revealed abstinence from sex before sample was collected for analysis in 17.4 %(140) of cases for one to two days, 68.2 %(549) of the patients' period of abstinence was between 3-4 days, 3.0 %(24) of the patient's period of abstinence was 5-6 days while 11.4 %(92) period of abstinence was greater than seven days.

Coitus interruptus was a more common method of semen collection - 61%(491) than masturbation - 34.3 %(276) and 4.7 %(38) of

patients' method of collection of semen for analysis was not indicated as shown in **table 2**.

A total of 29.9% (241) of the men produced semen volume of less than 2mls while majority 70.1% (564) produced semen volume of greater than 2mls as shown in (**Table3**).

Normozoospermia accounted for 34.7% (279), azoospermia accounted for 15.3% (123), Asthenozoospermia accounted for 7.5% (60), teratozoospermia occurred in 9.9% (80) while oligozoospermia occurred in 10.5% (85) Oligoteratozoospermia 7.3% (59), Oligoasthenozoospermia 7.1(57), Teratoasthenozoospermia 4.6% (37), while Oligoasthenoterazoospermia 3.1 (25) of cases as shown in **Table 4**.

Table 5: shows presence of pus cells greater than 5 per high power field in which, a total of 6.6% (53) of the patients had greater than 5 pus cells per high power field.

Normozoospermia 28.3%(15), azoospermia accounted for 3.8%(2), Asthenozoospermia accounted for 15.1% (8), teratozoospermia occurred in 5.7%(3) while oligozoospermia occurred in 9.4%(5) Oligoteratozoospermia 13.2% (7), Oligoasthenozoospermia 11.3%(6), Teratoasthenozoospermia 7.5% (4), while Oligoasthenoterazoospermia 5.3% (3) .

TABLE 1: PERIOD OF ABSTINENCE FROM SEX BEFORE SEMEN WAS PRODUCED FOR ANALYSIS.

<i>Days</i>	No	%
1-2	140	17.4
3-4	549	68.2
5-6	24	3.0
>7	92	11.4
Total	805	100

TABLE 2: METHOD OF SEMEN COLLECTION (n=805)

<i>Method</i>	No	%
Masturbation	276	34.3
Coitus Interruptus (Withdrawal)	491	61.0
<i>Method not indicated</i>	38	4.7
Total	805	100

TABLE 3: VOLUME OF SEMEN PRODUCED (n=805)

<i>Mls</i>	No	%
<2	241	29.9
>2	564	70.1
Total	805	100

TABLE 4: CLASSIFICATION OF SEMEN QUALITY (n=805)

<i>Type of Semen quality</i>	No	%
Normozoospermia	279	34.7
Azoospermia	123	15.3
<i>Asthenozoospermia</i>	60	7.5
<i>Teratozoospermia</i>	80	9.9
<i>Oligozoospermia</i>	85	10.5
<i>Oligoterazoospermia</i>	59	7.3
<i>Oligoasthenozoospermia</i>	57	7.1
<i>Teratoasthenozoospermia</i>	37	4.6
<i>Oligoasthenoteratozoospermia</i>	25	3.1
Total	805	100

TABLE 5: *PUS CELLS GREATER THAN 5 PER HIGH POWER FIELD.

<i>Type of Semen Quality</i>	No	%
Normozoospermia	15	28.3
Asthenozoospermia	8	15.1
<i>Oligozoospermia</i>	5	9.4
<i>Azoospermia</i>	2	3.8
<i>Teratozoospermia</i>	3	5.7
<i>Oligoterazoospermia</i>	7	13.2
<i>Oligoasthenozoospermia</i>	6	11.3
<i>Teratoasthenozoospermia</i>	4	7.5
<i>Oligoasthenoteratozoospermia</i>	3	5.7
Total	53	100

*Pus cells of >5 per High Power field suggests ongoing male genital tract infection.

DISCUSSION:

This study which reviewed the semen quality of 805 infertile patients revealed that 34.7% of the patients studied had normal sperm count while about 65% of the patients had abnormal sperm count. This is higher than an earlier study in this center where only 29% of the patients had normal sperm count¹. This slight improvement may be due to increased awareness of patients for proper treatment and prevention of sexually transmitted infections, either as individuals, by the mass media or both. This is similar to a study at Ilorin where 31% of the patients had normal sperm count⁷.

From this retrospective analysis, the current 15.3% of azoospermia is higher than that previously reported from this centre, and other parts of the country^{1,7}.

This is really alarming even though there is an overall improvement of semen quality in this center, that of azoospermia appears to be on the increase. The treatment of this condition in our environment is very difficult if not impossible.

From this study, 17.4% of patients abstained from sexual intercourse for 1-2 days before samples were collected while majority of patients (68.2%) abstained from sexual intercourse for 3-4 days. About 11% of the patients abstained from sex for greater than one week. The duration of abstinence is known to affect the semen quality. The WHO guidelines recommends abstinence from sexual intercourse for two to seven days before a semen sample is taken²³. Longer periods of abstinence may result in poor motility and morphology, often with associated increase in sperm counts, while shorter periods may be associated with improved motility but a decrease in sperm count²³.

Table 2 showed that 34.3% of the patients collected their semen for analysis by masturbation while a greater percentage (61.0%) obtained the sample by withdrawal (coitus interruptus) method. A Semen sample obtained by masturbation is the best method for collection of sample for analysis. Spillage of the first part of the ejaculate affects the quality of semen results, since the highest concentration of the spermatozoa are contained in the split ejaculate²³. Since most of the patients obtained

their sample by withdrawal (coitus interruptus) method, it is possible that some of the semen may have escaped into the vaginal before withdrawal and even spillage is more likely to occur and therefore could affect semen quality.

Seventy percent of the men produced semen with volumes greater than 2mls, while 30% produced semen of less than 2mls. Normal semen ranges between 2mls to 5mls²¹.

While some studies support the observation that there may be no relationship between semen volume and ease of conceptions, some other authors associated low seminal volume with reduced fertility potential⁶.

From this study, about 7% of the total number of patients had pus cells greater than 5 per high power field. This is similar to an earlier study where pus cells was found in 8.6% of the patients. This is an indication of on going infection in the male genital tract, which could contribute to infertility¹⁰.

Pus cells greater than 5 per high power field may indicate evidence of infection¹⁰. Even when the semen quality is normal, if infection occurs, it would be a matter of time before the same semen would be abnormal¹⁰.

CONCLUSION

From this study, abnormal semen quality is high (62%), and seminal fluid analysis is helpful in the investigation of infertility in this environment. Identification of risk factors or aetiological agents might help in the management of these patients; unfortunately, little effort is made towards addressing infertility in this country particularly male factor infertility.

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