

## Review Article

### INVESTIGATION OF INFERTILITY

#### — Semen Analysis

Dr. M. G. Muazzam

Semen analysis is one of the routine investigations in a clinical laboratory. Due to lack of proper information most of the people still blame the female partner for sterility. So long the people will remain unaware of the fact that the male partner may also be equally responsible for sterility, the female folks will be continued to be blamed alone and her life will be made miserable. Very little work has been done on this problem. Shaw (1956) claims that the faults are one third in female, one third in male and the rest in both the partners. Wells (1965) also claims that blame for sterility should be put on both the partners equally. Muazzam (1962) found that out of 94 cases of primary sterility 57 (60.6%) had defects in the male partner. So, emphasis should be given first on the semen analysis before submitting the wives for investigations, curettage and other ordeals.

In this paper a routine method and the report of 130 semen analysis have been recorded.

#### **Materials and Methods :**

Subjects : All the patients were referred by clinicians for examination.

Age : It varied from 25 years to 50 years, but majority belonged to the age group of 30 to 40 years.

Collection of material : Most of the patients produced the masturbated specimens in the laboratory. Only a few of them practised coitus interruptus as they were unable to produce semen by masturbation.

The specimen was collected in widemouthed test tube provided by the laboratory. No specimen was collected in the condom as sperms die almost immediately in the condom.

All the patients did not have any emission for at least three days prior to the examination.

All the specimens reached the working table within 15 minutes to one hour of the emission. Actual examination was commenced within half to one hour of emission to allow liquefaction of the gel.

Each specimen was examined under the following heads :-

(1) Colour : Most of the specimens had the usual yellowish white colour irrespective of the quality of the semen. A few of the specimen had a distinct yellowish tinge which is common after long abstinence.

(2) Volume : The volume was measured by measuring pipette.

(3) Viscosity : Viscosity was measured by measuring the time taken for 1 ml. of semen to run through a standardized pipette. More accurate measurement is not necessary. Too viscous or less viscous semen can be recognised by simple tilting the tube. Viscosity should be measured after the gel has been liquified.

(4) pH : pH is measured by universal indicator, colorimetric method is unsuitable and further accurate result is not necessary.

(5) Motility : Diluted specimens were examined under microscope and by actual counting of motile and total number of sperms, actual motility percentage was calculated. Diluting fluid should be such that the sperms can survive in that.

Sodium dihydrogen phosphate	2.04 gm.
K-hydrogen phosphate	0.08 gm.
Glucose	3.20 gm
D. water	10 <sup>c</sup> ml.

At least 200 sperms were counted.

(6) Sperm count : Sperms were counted by haemocytometer by diluting the semen in W. B. C. pipette with distilled water. The result is expressed by the number per ml. and also per ejaculation.

Further, from the percentage of living sperms the actual number of living sperms should be calculated. Only number per ml. is not useful unless the sperms are living as well. Again among the living ones, the morphologically normal ones are of real importance.

(7) Morphology : Smear is stained with Heidenhain's iron-hematoxylin for the study of morphology.

For routine study Leishman or Geimsa stain will be sufficient. With careful look by oil-immersion lens a fair idea may be formed about morphology of sperms.

**Result :**

Volume : The volume varied from 0.5 ml. to 6.0 ml. but 76 (58.5%) had a volume of 2.1 to 4.0 ml. The volume in cases of normospermia, oligospermia, azospermia and necrospermia has been shown in table I.

Types of semen	Below 1 ml.	1-2 ml.	2.1-4 ml.	4.1-6 ml.	Total	%
Normospermia	1	7	30	12	50	38.5
Oligospermia	2	5	14	5	26	20.0
Azospermia	3	15	28	2	48	36.9
Necrospermia	-	1	4	1	6	4.6
	6	28	76	20	130	100.0%

**Table I**

From the above chart it is evident that the average volume was 2-4 ml.

Viscosity-Most of the azospermia specimens were less viscous than normal. The mere look is enough to suggest that the specimen is less viscous but it is not always associated with azospermia.

pH-All the specimens were alkaline in reaction and their pH was within normal range of 7.4 to 8.4. If the nine lines were omitted been given in table II.

Types of semen	Standard of sperm count			Total No. of specimen with sperms.	Total No. of specimen.
	50 mill. /ml.	50 mill per ejaculation.	50 mill. living per ejaculation.		
Normospermia	44	63	50	82	130
Oligospermia	38	19	26		
Azoospermia	48	48	48		
Necrospermia	-	-	6		
Total No. of Non-fecundatity specimens	86	67	80		
	66.15%	51.53%	61.53%		

**Table II**

48 specimens were azoospermic and 6 were necrospermic, so that 54 were definitely non-fecundating. Another 26 were also non-fecundating-considering 50 million living sperms per ejaculation as the minimum level for fecundation. Thus in all 80 specimens were non-fecundating making a percentage of 61.53%. If 50 million sperms per ml. is taken as minimum level for fecundation then the total non-fecundating specimens come to 86 (66.15%). Thus roughly two third of the subjects in this series had non-fecundating semen and only about one third had normal semen.

**Morphology**-The morphology for normospermic specimens were 50 to 95% and those for oligospermic cases were 20 to 99%.

**Other findings**-7 cases showed pus cells and one gave history of gonorrhoea. 10 cases showed epithelial cells and one showed few **R. B. C.**

Sartoli cells were found in some cases.

**W. R.** was done in 31 cases and all were negative.

**Duration of Marriage :**

The time between the marriage and semen analysis varied widely, but 104 (80%) subjects came for medical check up after 5 to 20 years of marriage. Table III shows the duration of marriage of 121 subjects.

		No. of Subjects
Below	5 yrs.	13
5-10	"	49
11-15	"	35
16-20	"	20
21-25	"	2
26-30	"	1
31-33	"	1

**Table III**

**Double Marriage :** In spite of ignorance about defects in male, very few indulged in polygamy. Only 17 subjects took second wife (none more than one) after a long wait. Table IV shows the duration between first and second marriage of the 17 subjects (13.1%).

		No. of subjects
After 3	yrs.	1
After 5	"	1
After 6	"	2
After 10	"	5
After 22	"	2
After 14	"	1
After 15	"	1
After 17	"	1
After 20	"	1
After 25	"	1
After 26	"	1

**Table IV**

So, 53% took second wife 6-12 yrs. after the first marriage. This goes against the allegation that the Muslims are polygamous.

**Discussion :**

The normal composition of semen is variable. Some workers give more importance on number of sperms per ml. while others on number per ejaculation. But none of these figures are of any use unless the sperms are motile and morphologically normal. The standard of Farris (1950), 50 million per ejaculation is the lowest limit of fecundity. But the sperms must be actively motile. The figures of Wilfred Shaw is 96 million per ejaculation. Considering these two, it seems 50 million living sperms ejaculation should be an ideal figure (Muazzam, 1962). Taking this as minimum standard the total number of fecundating and non-fecundating specimens came to 50 and 90 respectively. So, it is interesting to note that in 61.53% male partner is mainly responsible for infertility. This figure indicates that male partner should submit for medical check up and this minimises the fruitless second marriage even if it is only 13.1% in this series.

As for the male responsibility it must be agreed that in the absence of the investigation of female partners, the figure obtained is not entirely factual. But defects in female partners as well, will not minimise the defects in male partners. The investigations in males will reveal the defects only in male, and those in both will reveal defects in males and females.

Whenever such a case is diagnosed by pathologists or clinicians, the problem remains how to advise the patient. While advising the patients more emphasis should be given on family life and maintenance of the marital bond.

**Acknowledgement**

Thanks are due to my clinical colleagues who have referred their cases to me.

**References**

Ferris, E. J. (1950), Human Fertility & Problems of Male; The Author's Press.  
Hawkins, J. (1961)-Shaw's Text Book of Gynaecology, Churchill, 7th ed. 276-277.  
Kule, C. A. & Neil, B. (1961) Wright's Applied Physiology; Oxford Univ. Press, 10th ed. 536-537.  
Muazzam, M.G. (1962), Responsibility of Males in Primary Sterility; Medical Digest, 30, 531.  
Well, B. B. (1965), Clinical Pathology; Saunders, 2nd ed. 426-427.