

CORRELATION BETWEEN TESTICULAR VOLUME & SPERM COUNT IN INFERTILE SOUTH INDIAN MALE PATIENTSVinayaka U. S¹, Devadasa Acharya K², Arafat M. Haris³, Ajamal Shad C. M⁴, Ravichandra G⁵**HOW TO CITE THIS ARTICLE:**

Vinayaka U. S, Devadasa Acharya K, Arafat M. Haris, Ajamal Shad C. M, Ravichandra G. "Correlation Between Testicular Volume & Sperm Count in Infertile South Indian Male Patients". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 36, August 18; Page: 9478-9483, DOI: 10.14260/jemds/2014/3223

ABSTRACT: INTRODUCTION: Infertility is considered one of the main public health issues and about 40% - 50% males are involved in the infertility cases. The most common cause of male infertility is abnormal semen parameters. Ultrasound examinations of scrotum and semen analysis are the common investigations done in evaluating male sub fertility. An atrophic testis is closely associated with oligospermia. **OBJECTIVE:** To correlate the testicular volume as measured with ultrasonography and sperm count of the males **METHODS:** Patients aged between 27 and 48 years were our study participants. Fifty males who presented for infertility evaluation unit were investigated with ultrasonography of testes and semen analysis. **RESULTS:** The tendency of the graph showed increase in sperm count in relation to increase in testicular volume. Smaller the testicular size, lesser was the sperm count. **CONCLUSION:** Our comparative prospective study showed that small testicular size was associated with decreased sperm count and as the testicular size increases the sperm count also increases.

KEYWORDS: Male infertility, sperm count, testicular volume, ultrasonography.

INTRODUCTION: Infertility is considered one of the main public health issues, as it affects about 25% of the couples of reproductive age in various degrees of severity.^[1]

The male factor is involved in 40% - 50% of infertility cases. The most common type of male infertility is idiopathic infertility, which is characterized by the presence of one or more abnormal semen parameters, like decreased sperm count, abnormal shape of sperms, non-motile sperms etc. with no identifiable cause.^[2]

Other secondary causes like varicocele, obstruction to spermatic ducts, post radiation or orchidectomy are less common causes of oligospermia. Sperm factor is responsible for about 60-65 % cases of male infertility.^[3]

The sperm count varies from 20 to 150 million sperms per milliliter and at least 60% of the sperms should have a normal shape and show normal forward movement for optimal fertility.^[4]

Various studies have found that a sperm count of less than 10 million per milliliter is suboptimal for fertility; however there is no cut off value of sperm count that is diagnostic of infertility.^[5]

Ultrasound examinations of scrotum and semen analysis are the common investigations done in evaluating male sub fertility. Ultrasound is a very useful modality for assessing the testicular size^[6,7] and also other related conditions like varicocele, epididymo-orchitis and undescended testis.^[8]

The testicular volume can be calculated by using ultrasonography; the average volume of normal adult testis being $18 \text{ cm}^3 \pm 4 \text{ cms}$ ^[3,9] An atrophic testes is closely associated with oligospermia and in turn is a major cause contributing for male infertility.^[10,11]

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Semen analysis of male partner of infertile marriages is the first line investigation in evaluation of male infertility.^[12] The sperm count per ejaculation after abstinence of 3-4 days is a better indicator of male fertility.^[13] Though a sperm count of less than 20 million is associated with subfertility, there is no cut off value which is diagnostic of infertility.^[9]

OBJECTIVES OF THE STUDY: The purpose of the study is to correlate between the testicular volume as measured with ultrasonography and sperm count of males undergoing evaluation for infertility to determine the significance of testicular volume in ejaculating adequate sperm count.

MATERIALS AND METHODS: Patients aged between 27 and 48 were our study participants. Patients with acute epididymo-orchitis, neoplasm of testis, with history of previous orchidectomy or undescended testis were excluded from the study. Also patients who were not willing for semen analysis or who could not ejaculate in laboratory were excluded from the study.

A total of 50 males who presented to infertility evaluation unit during the study period of two years were our study participants. After informed consent sonography of scrotum was performed for every participant, in addition to that Doppler evaluation was also done for testicular vessels. Ultrasound scan of the scrotum were performed in supine position with penis resting on the abdominal wall.

The Doppler sonography of scrotum was done using Philips Enviser with linear high frequency transducer of 9 MHz frequency by a single radiologist having 12 years of experience. For each patient the testicular size were measured in three planes and volume is calculated using ellipsoid formula (length × width × thickness × 0.52)^[9] and the same is repeated for other testis. Then average volume of testis is calculated by adding the two volumes and dividing by two. The findings were expressed as descriptive statistics.

After discussing the sonographic report with the patient, he was asked to come for semen analysis after abstaining from intercourse for 3 days. Patients were asked to ejaculate in a sterile container after masturbation in the laboratory and the specimen was analyzed for sperm count, motility and any evidence of abnormal cells.^[12, 13]

RESULTS: Our study population consisted of 50 patients in a span of two years. The youngest of them was aged 27 years and the eldest was 48 years with mean age of 34.36±4.42 years. All the 50 patients were referred from infertility clinic for ultrasonography of scrotum and semen analysis as part of infertility work up. On ultrasound evaluation the testicular volume was between 5 cm³ to 18 cm³ with mean of 11.3±3.8 cm.³

The semen analysis of participants was documented revealed a range of 3million sperms per milliliter to 70 million sperms per milliliter with a mean of 29.28±21.5 million per milliliter. The relationship between the ages of the patients with testicular volume and with sperm count was evaluated. The relationship between the average testicular volume and the sperm count per ejaculation were compared.

The study did not show any significant relationship between the age of the person and the testicular volume and also age was not criteria for adequate sperm count in our study population(Figure 1 and Figure 2), however the graph showed increase tendency of sperm count in

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relation to increase in testicular volume. Smaller the testicular size, lesser was the sperm count (Figure 3).

DISCUSSION: Infertility is a significant health concern in the world, which is increasing in incidence. The male factor is considered to be the cause of infertility in about 40-50% of the infertile couples. The causes of male infertility are broadly differentiated into treatable and or non-correctable causes. The decreased sperm count due to testicular atrophy cannot be corrected whereas oligospermia due to obstruction to the transport of sperm at spermatic duct or ejaculatory duct are possibly correctable.^[10]

Speroff L, Glass RH, Kase NG et al have found that sperm factor is the cause of infertility in about 65 % cases of male infertility. Idiopathic cause is the common reason of oligospermia, followed by varicocele. Other rare causes are ejaculatory duct blockage, infectious diseases etc. Guzick DS et al have described the usefulness of ultrasound scan of the scrotum as one of the first line investigations done in evaluating male infertility. Baker HW and Sabanegh E have found in different studies that a small sized testis is associated with low fertility.

In our study, we correlated between the average testicular volume, which was calculated by measuring the volume of each testis separately by sonography and then calculating the average. We found linear correlation between average testicular volume and spermatic count. Smaller the testis, lesser was the sperm count, bigger the testes, more was the sperm count (Figure.3). Also our study revealed no significant change in sperm count in patients of different ages within the study group as long as the testicular size is towards higher side of normal. Even in relatively young males of our study population, sperm count was less, when the testicular size was towards lower end of the normal range of size. (Figure1 and Figure 2).

CONCLUSION: Our comparative prospective study showed that small testicular size is associated with decreased sperm count and as the testicular size increases the sperm count also increases. Ultrasound scan of scrotum is a good modality of investigation in evaluation of male infertility by assessing the testicular size, by indirectly assessing the possible sperm count and can be utilized in the initial assessment of male infertility.

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Image 1: Graph showing the relation between the age of the patient against the mean testicular volume.

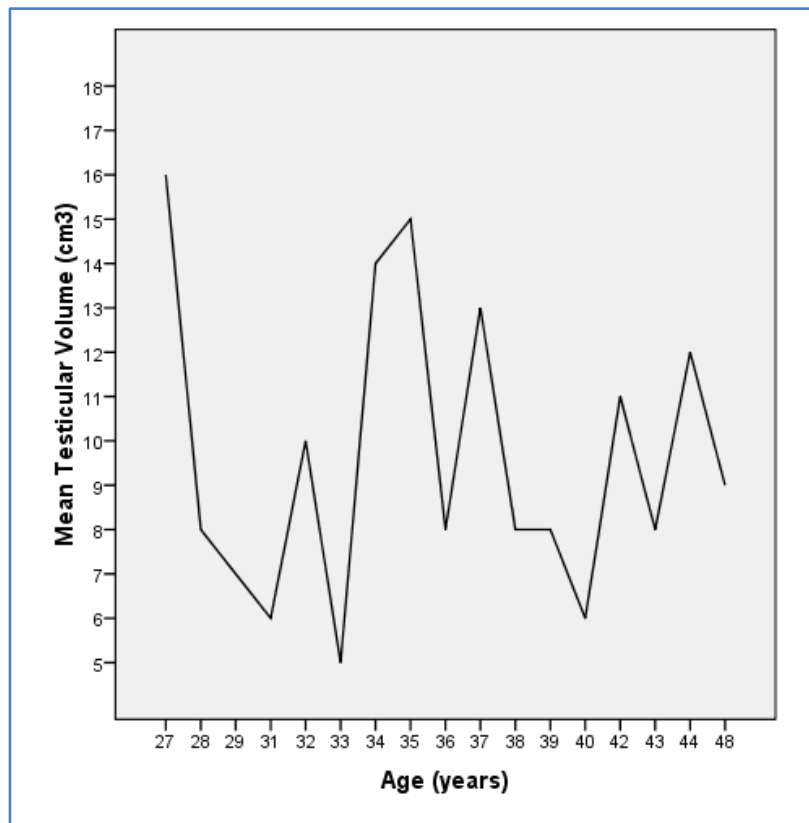


Image 1

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Image 2: Graph showing the relationship between the age of the patient and the sperm count

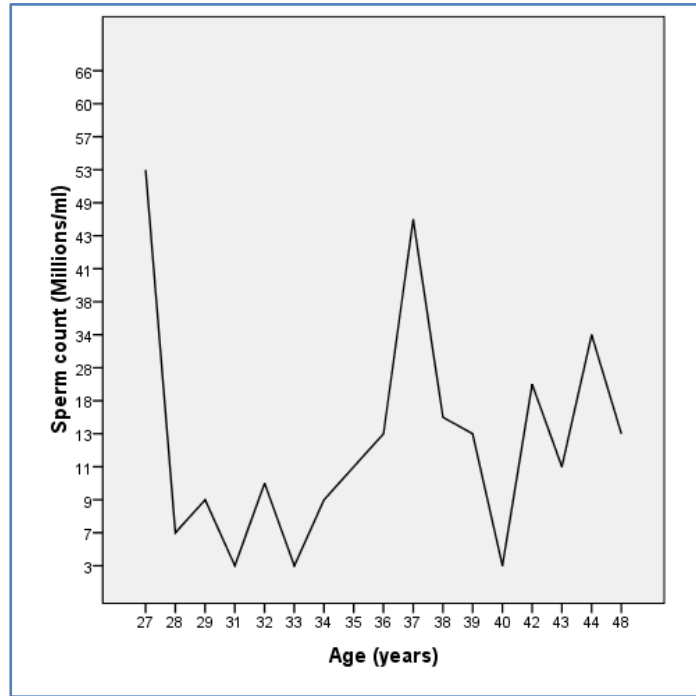


Image 2

Image 3: Graph representing the relationship between the mean testicular volume and Sperm count.

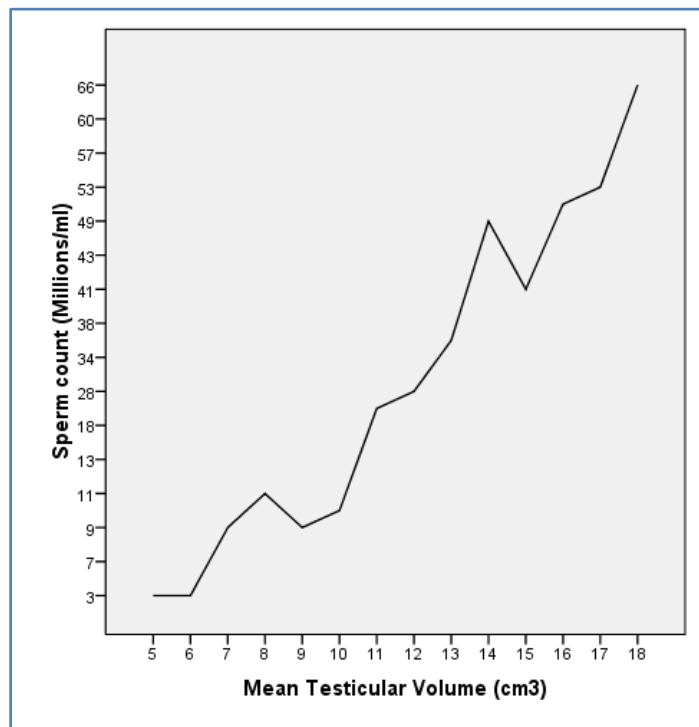


Image 3

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Date of Submission: 25/07/2014.
Date of Peer Review: 26/07/2014.
Date of Acceptance: 12/08/2014.
Date of Publishing: 18/08/2014.