



Original Research

## Testicular Volume to Semen Analysis in Male Patients with Andrology Poly, RSUD Dr. Soetomo Surabaya

Ilham Masdar Apriansah<sup>1</sup> 

<sup>1</sup> Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia



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\*) Corresponding author:

E-mail: [ilhammasdar@gmail.com](mailto:ilhammasdar@gmail.com)

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### Abstract

*Examination of semen/ejaculates/sperm is the initial screening examination that a subfertile/infertile couple must perform to identify the cause of infertility that may originate from the male partner. In addition to sperm analysis, a physical examination is required, particularly of the internal and external genital organs, because abnormal sperm analysis results can be caused by anatomical abnormalities and/or testicular function. To determine the relationship between testicular volume and sperm analysis in male patients of Dr. Soetomo's Andrology hospital in Surabaya. Using secondary data, this observational analytic study examines the relationship between testicular volume and sperm analysis in male patients at the Andrology clinic RSUD Dr. Soetomo in Surabaya. According to the results of statistical tests conducted on 64 samples using the chi-square test, the value of significance or p-value is  $0.005 < 0.05$ . Thus, it can be concluded that testicular volume is related to morphology, motility, and sperm concentration. The chi-square test was used to determine the relationship between testicular volume and sperm analysis. One of the risk factors for decreased semen analysis results is testicular volume.*

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## 1. Introduction

The end of puberty is the stage where the testes reach the final stage in their maturation process. When it reaches this stage, the testes begin to function as secretory glands that produce spermatozoa and as an endocrine organ that is responsible for the production of testosterone which is associated with the development of male secondary sex characteristics.<sup>1</sup>

Semen/ejaculate/sperm examination is the initial screening test that husbands of subfertile/infertile couples must perform in an effort to identify causes of infertility that may stem from his side. In addition to sperm analysis, a physical examination must be performed, focusing on the internal and external genitalia, because it is known that abnormalities in sperm analysis results might be caused by anatomical abnormalities and/or testicular function. In extreme circumstances (azoospermia) it is necessary to carry out other supporting examinations, hormones, ultrasound, and sometimes a testicular biopsy is necessary.<sup>1</sup>

The ejaculatory examination is basically aimed at 2 things, namely the examination of the secretions of the accessory sex glands and the cells produced by the testes.<sup>1</sup> In andrological examination, the sperm will be observed for shape, viscosity, color, odor, pH, and motility (rate and velocity of sperm). Even though a healthy man with thick which is sufficient, the color and smell are normal but it is possible for a man to experience a slow speed straight to the uterus or even zero. This is caused by an imperfect sperm shape. In a study conducted by Condorelli et al (2013), It was shown that patients who had normal testicular volumes were not the same as those who had lower testicular volumes. Semen volume, sperm concentration, and the proportion of motile sperm were all shown to be lower in patients whose testicles had a low total volume.<sup>2</sup>

The authors are interested in examining the relationship between testicular volume and semen analysis at the Andrology Poly Hospital of Dr. Soetomo Surabaya so that it can determine whether or not there is a relationship between testicular volume and semen analysis. This is because research on the relationship between testicular volume and semen analysis is still few and infrequent. Additionally, to complement the existing research data, the authors are interested in examining the relationship between testicular volume and semen analysis.

## 2. Methods

This study is an observational analytical study that uses secondary data to examine the link

between testicular volume and semen analysis in male patients who were treated at the Andrology Poly Hospital of Dr. Soetomo in Surabaya. The type of data used is secondary data, namely patient medical records at the Andrology Poly Dr. Soetomo Surabaya for the period January 2015 – December 2015. The data obtained were analyzed based on the technique of processing and presenting bivariate data. The collected data is processed using the SPSS program. The data with nominal and ordinal measurement scales were tested with chi-square to determine whether or not there is a relationship between the independent variable and the dependent variable, with the stipulation that if the p-value (significance) was less than 0.05, then there is a relationship, and if it was greater than 0.05, then there is no relationship between the two variables. This was done in order to determine whether or not there is a relationship between the independent variable and the dependent variable. This was done in order to determine whether or not there is a relationship between the two variables. The next step is to calculate the contingency coefficient in order to establish the degree of the link.

## 3. Results

In this study, the following results are:

**Table 1.** Characteristics Analysis of The Results Study

Variable	n	Representation Value	Unit of Measurement
Testis Volume	64	16 ± 5,015	cc
Normal Morphology	28	43,8	%
Normal Mortility	26	40,6	%
Normal Konsentration	32	50,0	%

The average testicular volume of respondents at the Andrology Poly Hospital of Dr. Soetomo Surabaya is 16cc, with a standard deviation of 5.015cc, according to the findings of a data analysis conducted by researchers. This is not much different from the research conducted in Albania by Kristo A, et al (2014) which found the average testicular volume of respondents was 18.15cc.<sup>3</sup> Another study conducted in South India also found an average testicular volume of 16.97cc (Kumar et al, 2013).<sup>4</sup> Based on the results of data analysis and sources from studies in other countries, it can be concluded that the average testicular volume has almost the same value in several countries.

The results of the research data analysis also showed the number of normal sperm morphology of the respondents at the Andrology Poly Hospital of Dr. Soetomo Surabaya by 43.8%, this is not much different from research that has been done in Italy which got the results of normal sperm morphology of 38.7%.<sup>2</sup> Another study in France also found that the number of normal sperm morphology was not much different, namely 49.5%.<sup>5</sup>

The number of normal sperm motility among respondents at the Andrology Poly Hospital of Dr. Soetomo Surabaya was 40.6%, according to the findings of a data analysis conducted by researchers; this is comparable to the findings of a study conducted in Italy, which yielded a normal sperm motility count of 50.3%.<sup>2</sup> In a separate French investigation, 56.5% of sperm motility was normal.<sup>5</sup>

Based on the results of data analysis that has been carried out by researchers, it is found that the number of normal sperm concentrations from respondents at the Andrology Poly Hospital of Dr. Soetomo Surabaya by 50.0%, this is not much different from research that has been done in Italy which got the results of a normal sperm concentration of 59.7%.<sup>2</sup>

## 4. Discussion

### 1. Analysis of the Relationship between Testicular Volume and Sperm Morphology

According to the findings of this study, the proportion of patients with normal sperm morphology in normal and abnormal testicular volumes was 31.2% and 12.5%, respectively. This is consistent with the findings of an Albanian study, in which the proportion of patients with normal sperm morphology in normal and abnormal testicular volumes was approximately 28.7% and 14.7%.<sup>3</sup> Testicular volume itself can be considered normal in size in the range of 12.5 - 19 cc (Kim, 2007). Based on the results of the study, it was found that there was a relationship between testicular volume and sperm morphology, this is in accordance with research in Italy that testicular volume can affect the decrease in sperm morphology quality.<sup>2</sup> Another study conducted by Kristo A, et al (2014) also stated that testicular volume was a risk factor for the quality of sperm morphology. This decrease in the number of normal sperm morphology by testicular volume is possible because testicular volume contributes to the production of spermatozoa.<sup>3</sup>

In this study, there was a significant relationship between testicular volume and sperm

morphology, this is in line with the results in a study conducted by Kristo A, et al (2014), which said that the relationship between testicular volume and sperm morphology had a significant positive relationship which had a significant positive relationship. that there is a very strong relationship between testicular volume and sperm morphology.<sup>3</sup>

Another study also cited results regarding the relationship between testicular volume and sperm morphology. In a study conducted by Condorelli R, et al (2013), it was found that there was a relationship between testicular volume and sperm morphology.<sup>2</sup>

The results of data analysis indicate that there is a correlation between testicular volume and sperm morphology. In aberrant testicular volume, sperm morphology was diminished. 67% of patients with testicular volume 12.5 cc and > 19 cc had aberrant sperm morphology, which was feasible because testicular volume contributed to spermatozoa production.<sup>3</sup> Another possible cause of the effect of abnormal testicular volume on the decrease in semen analysis results is varicocele, patients with high-severity varicoceles themselves have a tendency to experience testicular volume reduction, as well as an increase in temperature which results in a decrease in the quality of semen analysis results.<sup>6</sup>

## 5. Conclusion

Based on the results of research and general discussion, it can be concluded that testicular volume affects the quality and quantity of semen analysis. In more detail, it can be explained as follows that men with abnormal testicular volume have a risk of experiencing a decrease in the number of normal sperm morphology. Men with abnormal testicular volume are at risk for decreased normal sperm motility. Men with abnormal testicular volume have a risk of experiencing a decrease in the number of normal sperm concentrations.

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## Authors' Contributions

Author have contributed to the final manuscript. The contribution each author as follow: collected the data, drafted the manuscript, devised the main conceptual ideas and critical revision of the manuscript. Author discussed the result and contributed to the final manuscript.

## Conflict of Interest

The author state there is no conflict of interest.

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