Hulondalo Jurnal Ilmu Kesehatan (HJIK) Vol 1 No 2 | Desember (2021)
ISSN: 2686-2026

OVERVIEW OF THE QUALITY AND QUANTITY OF SPERM IN ALCOHOLICS IN TALUMOPATU VILLAGE TAPA DISTRICT BONE BOLANGO

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ABSTRACT

Consume excessive alcohol and in the long term will adversely affect the male reproductive system, among others is a decrease in the quality and quantity of sperm. The research aims to find out the picture of the quality and quantity of sperm in alcoholics in Talumopatu Village, Tapa District, Bone Bolango Regency. The type of research used is *descriptive* research with *quantitative* approach, *Cross Sectional* research design using sampling technique namely *Simple Random Sampling*.The data analysis used in this study is *univariate*.

The results showed that there is an alcohlik effect on the quality and quantity of sperm that is the volume of sperm as much as 43% of the average volume of sperm obtained as much as 1.5 ml. Sperm pH of 28% of the average sperm pH is obtained 9. Sperm motility as much as 33% of the average motility is obtained <50%. Sperm morphology as much as 38% of the average morphology of sperm obtained sperm cell form is 2 heads, small heads, large heads, and small tails and sperm count as much as 24% of the average sperm count obtained <50 million / ml.

Keywords:alcoholic, sperm, quality and quantity of sperm

INTRODUCTION

A person's health can be affected by several factors, one of the affects is the health factor [10]. Health behaviors that can affect a person's health are alcohol consumption, smoking, illicit drug consumption, stress and unbalanced nutrition. Alcohol is a drink containing ethanol containing psychoactive substances of an addictive nature. These psychoactive substances cause changes in a person's behavior and consciousness. The addictive nature of alcohol is the nature of a person's dependence or addiction to this substance [26].

Alcohol consumption in ASEAN countries, based on who's data, the highest percentage of ASEAN countries that consume alcohol is Vietnam at 8.4%, Thailand at 8.1%, Laos at 6.6%, Cambodia at 6.0%, the Philippines at 4.8%, Singapore at 2.4%, Malaysia at 0.9%, Brunei Darussalam at 0.4%, and the lowest presentation being Myanmar and Indonesia at 0.3% [30].

The proportion of alcohol consumption in Indonesia is still relatively low, but for some provinces it is found to be quite high [23]. In 2018 indicates the percentage of the most the highest alcohol consumption was occupied by 3 provinces namely North Sulawesi province by 16%, then East Nusa Tenggara province by 15%, and Bali province by 14%. For the proportion of Gorontalo Province ranked

fourth, the number of alcohol users was recorded at 11.3% in 2018 [23].

The results of a survey conducted by researchers in Bone Bolango District in 2020, especially in Talumopatu Village, there are about 40 people who consume liquor. Liquor consumption has long been a part of everyday life among the people and has become their habit. Alcoholism has been considered a problem associated with infertility in men. Some cases of infertility in men in talumopatu village are 37.6%. It is caused by a lack of sperm cell count or not having spermatozoa in cement that can fertilize the ovum [27].

Alcoholic beverages containing ethanol (C2H5OH) consists of three groups reviewed from the alcohol content in various types and packaging of existing beverages [20]. According to the regulation of the Minister of Health of the Republic of Indonesia No.86/MenKes/Per/IV/77 concerning Liquor, alcoholic beverages are divided into three groups, namely :

Class A Liquor class A is a liquor with ethanol content (C2H5OH) of 1% - 5%. Examples of drinks are Bir Bintang, Green sand, Anker Bir, San Miguel, and others [20].

Class B Liquor class B is a liquor with ethanol content (C2H5OH) more than 5% - 20%. Examples of class B drinks include Malaga Wine, Kolesom cap 39, Black Sticky Rice Wine, Old Man's Wine, Shochu, Creme Cacao, and other types of wine [20].

Class C Liquor class C is a liquor with ethanol content (C2H5OH) more than 20% - 50%. Examples of drinks are Mansion of House, Scotch Brandy, Stevenson, Tanqueray, Vodca, Brandy, and others [20]. Traditional liquor is also one of the famous beverages in some areas of Indonesia That is made simply and often used as a traditional banquet, such as rat stamps from manado and gorontalo, ballo from Makassar region, sopi from Maluku region, lapen from Yogyakarta, arak Bali [3].

Consuming alcohol excessively and over a long period of time will adversely affect the male reproductive system, hence it can affect infertility in men, due to reduced levels of the hormone testosterone, testicular atrophy and irregularities in the diameter of the seminiferous tubules in men[6]. Therefore the hormone testosterone is needed in sufficient quantities for sexual performance and also to ensure infertility in men [9].

Infertility is a reproductive system that damages or infertility the ability of a body to perform reproductive functions [27]. This has an impact on lifestyle and environmental factors, especially :

Obese men who are obese will affect sperm because of testosterone hormone and reduced growth hormone production. This is due to frequent consumption of high calorie foods, to avoid this avoid foods that are high in calories and diligent exercise [27].

The risk of smoking can cause effects such as the heart, lungs and blood vessels. In addition to causing these effects other harmful effects are the reproductive system that can decrease sperm count and abnormal sperm in terms of movement and shape. It is that there are chemicals in cigarettes that can cause disorders of the vascular system. In this vascularization system it is very important for the work of the organ, since an organ will not function without a blood supply. This rule also applies to testicles [27].

Testicles are exposed to radiation on a low scale but will suffer greater damage. Radiation on high intensity proven dangerous because its ability to increase body temperature can drastically damage tissue [27].

Chronic and acute alcohol use can affect hormones as well as regulation. One of the hormones affected is testosterone. If

low testosterone fructose production of divesika seminalias is also reduced. Fructose is an energy source for sperm because it is to move its flagel [27].

Sperm analysis is a method of sperm examination that is done to find out or determine the normal or abnormal sperm so that it becomes a cause of infertility [14]. Sperm analysis there are several important parameters, namely microscopic analysis of its parameters include volume, concentration, smell, color, and viscosity of sperm and to microscopically analyze its parameters include motility, and morphology of spermatozoa which is an important indicator in fertility in men [5].

Based on facts and data from observations made that the male population in 2020 in Bone Bolango Regency, especially in talumopatu village amounted to 993 people[18]. The percentage of liquor consumed in Bone Bolango Regency is 11%-12% of the population, this is the second highest Bone Bolango Regency that consumes alcohol and the percentage in all districts is almost no different, namely 12.4%-13.7%, except the lowest city of Gorontalo consumes alcohol by 8.0% [4]. From the results of the data, the region still consumes quite a lot of alcohol. Therefore, researchers are interested in conducting research with the title "Description of Quality and Quantity of Sperm In Alcoholics In Talumopatu Village, Tapa District, Bone Bolango Regency, Gorontalo Province".

RESEARCH METHODS

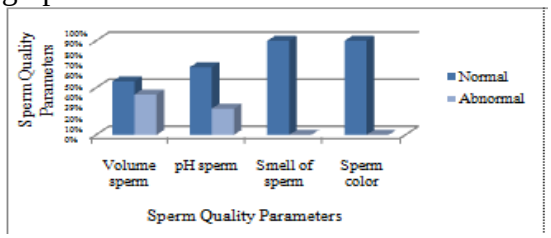
This research uses descriptive research type with Quantitative approach [22] and research design *Cross Sectional* [16].Sampling locations in Talumopatu Village, Tapa District, Bone Bolango Regency and sperm analysis locations were conducted in an integrated laboratory. The research time was conducted on September 21, 21 October 2020. The sample in the study was 21 alcoholics in Talumopatu Village, Tapa District, Bone Bolango Regency. The sample meets the inclusion criteria of Alcoholics for >2 months, alcoholics aged 17-30 years and willing to be sampled for research purposes and samples do not meet the exclusion criteria namely Alcoholics who have a history of disease, alcoholics aged <17 years and are not willing to be sampled for research purposes. The sample size of 21 samples is determined by a known population formula. Sampling technique is Simple Random Sampling. Technical data analysis that is univariate analysis and data presentation is descriptive [12].

RESEARCH RESULTS

This study aims to find out the quality and quantity of sperm in alcoholic subjects in Talumopatu Village, Tapa District, Bone Bolango Regency. Examination of sperm quality and quantity consists of several parameters namely volume, pH, smell and color, motility, morphology and sperm count.

Results of Sperm Quality Examination In Alcoholics

The results of examination of sperm quality in alcoholics are described in graph 1.

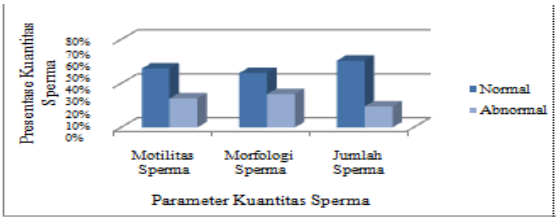


Based on graph 1 that the quality of sperm in alcoholics shows that more normal sperm volume is 57% of the average sperm volume obtained as much as 3 ml, compared to abnormal that is 43% of the average sperm volume obtained as much as 1.5 ml. Sperm pH showed more normal that is 72% of the average pH of sperm obtained 8, compared to abnormal that is 28% of the average pH of sperm obtained 9. The smell and color of sperm indicates normal

which is 100% chlorine/pandanus on average and the color is turbid white.

Results of Sperm Quality Examination In Alcoholics

The results of examination of sperm quality in alcoholics are described in graph 2



Based on graph 2 that the quantity of sperm in alcoholics shows that more normal sperm motility is 67% of the average sperm motility obtained >60%, compared to abnormal which is 33% of the average motility obtained <50%. Sperm morphology showed more normal that 62% of the average morphology obtained normal sperm size and shape, compared to abnormal i.e. 38% of average sperm morphology obtained 2-headed sperm cell shape, small head, large head, and small tail. Sperm count shows more normal i.e. 76% average sperm count obtained >60 million/ml compared to abnormal which is 24% of the average amount obtained <50 million/ml.

DISCUSSION

Sperm Quality In Alcoholics

Normal sperm volume is as much as 2-5 ml. If the volume of sperm <2 ml (hypospermia) or >5 ml (hyperspermia). This explains that in varicocele occurs dilatation of the trace pampiniformis scrotum veins resulting in vascularization disorders of the testicles that will interfere with the process of spermatogenesis [29]. At a normal sperm pH that is 7,2 up to 7,8. If the pH of sperm <7 then the pH of his sperm is acidic, this sperm cell is weak. Meanwhile, sperm pH>8 then the pH of the sperm base, this is indicated the presence of infection of the reproductive system[14]. In the smell of spermatozoa has a characteristic smell that is like the smell of acacia. Other odors such as fishy and rotten can be suspected of leukocytes (infections) or other causes such as (parasites) as well as the color of sperm the presence of red blood cells mixed with sperm [7].

Based on the results of examination of sperm quality in alcoholics obtained more normal sperm volume of 57% as many as 12 sperm samples compared to abnormal that is 43% As many as 9 sperm samples. In men the alcoholic indicates that the amount of testosterone will decrease. More normal sperm pH is 72% as much as 15 sperm samples compared to abnormal which is 28% as much as 6 sperm samples. The smell and color of sperm is 100% as much as 21 sperm samples have no effect on the smell or color of sperm.

From the results of sperm volume examination is supported by research Sutyarso and Hendri (2003) that 60% of sperm volume decreases due to little testosterone hormone. Then for the results of sperm pH examination supported by jensen research (2014) showed that 30% of alcohol consumption decreased against sperm concentration and the most found in the damage reproductive hormones that are hormon testosterone.The results of sperm odor and color are supported by Nurparma and Manuaba research (2017) sperm odor and color are only affected by infection of the genitals. If there is a red blood cell (haemospermia) in the ejakulat, it causes the color of the sperm to be red. Yellow color often consumes certain vitamins and medications.

Quantity of Sperm In Alcoholics

Consuming alcohol in excess can lower sperm motility, this is due to low testosterone levels, fructose production in the seminal vesicle is also reduced. This condition causes reduced sperm motility because sperm uses fructose as an energy source to move its flagella [27]. Sperm motility >50% is said to be the category of active movement while <30% is said to be

the category of weak movements and <20%it says categories don't move. Normal sperm morphology >60%. While the morphology of sperm is abnormal <40%) [14]. This is due to the disorder of maturation of spermatozoa and disorders in the process of synthesis of hormones so as to cause disruption in the process of formation of spermatozoa where with the presence of morphological abnormalities will also affect the motility of spermatozoa [13]. Some cases of infertility in men are caused by a lack of sperm count or lack of spermatozoa that can fertilize the ovum. Common causes of disorders of the male reproductive system are disrupted sperm production, stunted sperm transport system, health conditions [27].

Based on the results of examination of sperm quantity in alcoholics obtained more normal sperm motility that is 67% as many as 14 sperm samples, compared to abnormal 33% as many as 7 sperm samples. Sperm morphology is more normal which is 62% as many as 13 sperm samples compared to abnormal that is 38% as many as 8 sperm samples, wherethere is a two-headed sperm shape, a two-tail, a small tail, a small head, and a large head. More normal sperm count is 76% as many as 16 sperm samples, compared to abnormal that is 24% as much as 5 sperm samples.

From the results of sperm motility examination supported by research Jensen et al (2014) noted that consuming alcohol 4 to 5 units / week can decrease 33% movement and sperm count. Sperm morphology examination results supported by Melmambessy et al research (2015) showed 11% that the average morphology of sperm given a rat stamp treatment for 2 months was damaged and the results of sperm count examination were supported by wael et al research (2014) shows that traditional drinking has an adverse effect on sperm count 21.67%. It is that in chronic alcoholics there is a noticeable decrease in sperm count, motility and sperm morphology, thus causing infertility in the reproductive system.

Alcohol can also interfere with the decreased production of the hormone testosterone by disrupting the synthesis of *Nitric Oxide* (NO) which is a gas responsible for vasodilation of blood vessels. Studies in humans and animals have shown that consuming alcohol causes impaired fertility through low sperm count, abnormal morphology, decreased sperm motility, affects the testes and glands of the accessories [8]. Reduced testosterone is associated with the amount of alcohol consumed. The more alcohol consumed and the higher the alcohol content in the blood then the amount of testosterone decreases so that men are unable to maintain the erection [24]. It is that the testicles are responsible for the metabolism of alcohol, such as the work of the liver. But the liver is the main organ where alcohol metabolism, the testicles also have enzymes needed to oxidize alcohol. So when a man consume alcohol, then some of it will be destroyed by the testicles. The enzymes that the testes use for this process are the same as the enzymes that play a role in testosterone production. So when alcohol is oxidized inside the testes, most enzymes are used for this process, so there will be little enzyme left for testosterone production[9]. The consumption of one or two glasses of alcohol, one to two times per week does not increase the risk of fetal growth. Alcohol consumption of three or four glasses a day in men has no effect on fertility. Excessive alcohol consumption in men can lead to a decrease in cement quality [15].

It can be seen that frequent consumption of alcohol in the long term can be at risk of infertility or fertility in men. For its handling, balanced nutrition

is needed in the form of variety of healthy foods, the importance of a clean lifestyle, an active lifestyle andberolahraga serta memantau berat badan [7].

CONCLUSION

Based on the results of the research that has been done can be concluded that consuming alcohol can decrease the quality of sperm, namely abnormal sperm volume by 43%, and abnormal sperm pH by 28% and for the quantity of sperm that is abnormal sperm motility as much as 66%, abnormal sperm morphology as much as 38%, and abnormal sperm count as much as 24%.

Advice that can be conveyed to the public as a source of information on the adverse effects of frequent consumption of alcohol that can affect the quality and quantity of sperm and to subsequent researchers to continue this research by examining the viscosity of sperm in alcoholics.

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