



Medical and Islamic View of Alcoholic Cardiomyopathy

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ABSTRACT

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Background: Cardiomyopathy is a heart muscle disorder so which the heart cannot contract optimally. Alcoholic cardiomyopathy is a type of cardiomyopathy that dilates due to long-term alcohol consumption. The prevalence of alcoholic cardiomyopathy is higher in men than women. The age group with the most alcoholic cardiomyopathy was 45 to 74 year. Death from alcoholic cardiomyopathy had an autopsy result marked muscle dilatation. A toxicological examination can show the level of alcohol consumed. The cause of death in alcoholic cardiomyopathy is muscle dilatation due to chronic ethanol abuse (Dolinak, 2005). Islam expressly forbids something that makes losing mind, like alcohol. Alcohol has many disadvantages for the consumer in the form of loss of mind and turning away from Allah.

Objective: This report aims to learn more about the definition, pathophysiology, clinical manifestation, and treatment of Alcoholic Cardiomyopathy. Also, Knowing and explaining Alcoholic Cardiomyopathy in terms of death and Islamic views. **Methods:** The design of this research is a literature review or library review, which is a systematic, direct, and reproducible research method by identifying, evaluating, and synthesizing published research. **Result:** Alcoholic cardiomyopathy is a clinical diagnosis made in a patient with a set of findings that include a history of excessive alcohol consumption, possible physical signs of alcohol abuse (e.g., parotid disease, telangiectasia or spider angiomas, altered mental status, cirrhosis), heart failure, and other evidence consistent with dilated cardiomyopathy. People who frequently consume alcohol can cause nutritional disorders, especially vitamin B1 deficiency can cause cardiomyopathy. Alcohol will also cause abnormalities in the structure and function of mitochondria in heart cells. These abnormalities include enlarged mitochondrial structure, decreased metabolism, lack of several enzymes decreased ion transport, increased calcium flow, glycogen accumulation, and decreased ATP production. **Conclusion:** Cardiomyopathy is a heart muscle function disorder characterized by the loss of the ability of the heart muscle to pump blood so that the blood supply is not optimal and results in death. The most common cause is chronic alcohol consumption, which causes dilatation of the heart muscle. At the same time, alcohol is an ingredient that is forbidden to be consumed by Muslims because of its more significant impact.

Introduction

Cardiomyopathy is a heart muscle disorder so which the heart cannot contract

optimally. Cardiopathy causes excessive alcohol consumption, viral infections, hypertension, and others. Cardiomyopathy

has several classifications. Dilated cardiomyopathy, hypertrophic cardiomyopathy, and restrictive cardiomyopathy (Ram, 2018).

Alcoholic cardiomyopathy is a type of cardiomyopathy that dilates due to long-term alcohol consumption. The prevalence of alcoholic cardiomyopathy is higher in men than women. The age group with the most alcoholic cardiomyopathy was 45 to 74 years. Approximately one-third of each group had left ventricular dysfunction in a series of 50 asymptomatic alcoholic women and 100 asymptomatic alcoholic men. Compared to men, women who consume low doses of ethanol with body weight are more susceptible to left ventricular ejection fraction, so women are more sensitive to cardiac toxicity (Ram, 2018).

Alcohol and its metabolites are directly toxic to the heart. In addition, chronic ethanol abuse results in thiamine deficiency, resulting in the severity of cardiac disorders. Death from alcoholic cardiomyopathy had an autopsy result marked muscle dilatation. A toxicological examination can show the level of alcohol consumed. The cause of death in alcoholic cardiomyopathy is muscle dilatation due to chronic ethanol abuse (Dolinak, 2005). Islam expressly forbids something that makes losing mind, like alcohol. Alcohol has many disadvantages for the consumer in

the form of loss of mind and turning away from Allah.

Methods

The design of this research is a literature review or library review, which is a systematic, direct, and reproducible research method by identifying, evaluating, and synthesizing published research.

Result and Discussion

A. Alcoholic Cardiomyopathy

1. Definition

Cardiomyopathy is a heart muscle function disorder characterized by loss of the ability of the heart muscle to pump blood. Moreover, usually beat and is not caused by congenital heart defects, hypertension, valvular disease, coronary artery disease, or pericardial abnormalities (Wynne J, 2005).

In cardiomyopathy, the myocardium is damaged or disrupted so that the heart cannot contract normally. As compensation, the heart muscle enlarges or undergoes hypertrophy, and the heart cavity enlarges. Simultaneously with this enlargement process, connective tissue proliferates and infiltrates the heart muscle. Cardiomyocytes are damaged and die, resulting in heart failure, arrhythmias, and sudden

death. Therefore, cardiomyopathy is considered a major cause of cardiovascular morbidity and mortality. Alcoholic cardiomyopathy is a clinical diagnosis made in a patient with a set of findings that include a history of excessive alcohol consumption, possible physical signs of alcohol abuse (e.g., parotid disease, telangiectasia or spider angiomas, altered mental status, cirrhosis), heart failure, and other evidence consistent with dilated cardiomyopathy. (Nasution SA, 2017).

Ethyl alcohol or Ethanol is a low molecular weight hydrocarbon. Ethanol is widely available as a beverage and ingredient in dietary extracts, cough-cold remedies, and mouthwashes. Ethanol poisoning is common in modern society because of its wide availability. This substance is often used with other substances in suicide attempts. Morbidity often comes from Ethanol or concomitant injuries and illnesses because Ethanol greatly increases the risk of trauma, especially trauma from motor vehicle collisions or violent crimes. Accumulation of alcohol in the blood can cause an increase in the anion gap and a decrease in bicarbonate levels. Substances that cause toxicity are -hydroxybutyric

acid and Acetoacetic acid (Kraut JA, 2008).

2. Pathophysiology

a) Hypertrophic Cardiomyopathy

Massive ventricular hypertrophy is found in this disease, especially in the ventricular septum. Which causes the septum during systole to protrude into the left ventricular outflow tract and cause obstruction, and the right ventricle can be affected. Several degrees of myocardial fibrosis can be found. The mitral valve is displaced anteriorly due to hypertrophy of the papillary muscles, and the left ventricular space is filled with massive hypertrophy. Hemodynamic abnormalities occur due to hypertrophy, fibrosis, and heart muscle stiffness in the form of decreased cardiac distensibility, resulting in resistance in filling the left ventricle. However, the diastolic pump function remains normal until the end of the disease. Left ventricular outflow obstruction may develop due to abnormal positioning of the anterior leaflet of the mitral valve against a hypertrophied septum and a

variable peak systolic pressure gradient in the left ventricular outflow.

In contrast to obstruction caused by a permanently narrowed orifice, as in aortic stenosis, in hypertrophic cardiomyopathy, left ventricular outflow tract obstruction is dynamic and can change between examinations. The obstruction arises due to the preexisting narrowing of left ventricular outflow by the SAM from the mitral valve against the hypertrophied septum and midsystolic contact with the ventricular septum. Eighty percent of patients with hypertrophic cardiomyopathy have diastolic disorders and abnormalities in ventricular relaxation and filling. On the other hand, normal to super-normal systolic function. Most patients have a super-normal ejection fraction (75-80%) (Nasution SA, 2017).

b) Restrictive Cardiomyopathy

The pathophysiology of restrictive cardiomyopathy is decreased cardiac output, increased jugular venous pressure, and pulmonary congestion. In conditions with

associated endocardial involvement, partial obliteration of the ventricular space by fibrous tissue and thrombus increases the resistance to ventricular filling. The ventricles cannot meet the demands of cardiac output and increased ventricular filling pressures, resulting in intolerance to physical activity and dyspnea, which are the main symptoms. As a result of the continued increase in venous pressure, patients with restrictive cardiomyopathy usually have edema, ascites, and an enlarged liver. Jugular venous pressure also increases on inspiration (Kussmaul's sign). Heart sounds can be heard far away, and third and fourth heart sounds can be heard (Taylor RB, 2005).

c) Dilated Cardiomyopathy

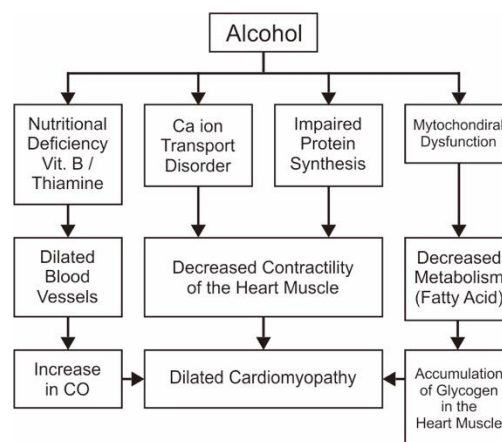
The primary physiological defects in the form of decreased strength of left ventricular contraction result in reduced stroke volume, lower ejection fraction, and end-systolic and end-diastolic volume increases. The left ventricle dilates, and the left atrial pressure increases, causing pulmonary hypertension

and right heart failure (Nasution SA, 2017).

People who frequently consume alcohol can cause nutritional disorders, especially vitamin B1 deficiency can cause cardiomyopathy. As with people who suffer from beriberi, there will be an increase in heart rate due to decreased blood vessel resistance (vasodilation).

Alcohol will also cause abnormalities in the structure and function of mitochondria in heart cells. These abnormalities include enlarged mitochondrial structure, decreased metabolism, lack of several enzymes decreased ion transport, increased calcium flow, glycogen accumulation, and decreased ATP production. A decrease in fatty acid metabolism characterizes it. Fatty acids are a source of hari for heart work. As a result, there will be a buildup of fatty acids in heart muscle cells. This accumulation of fatty acids will eventually inhibit protein synthesis in the heart muscle; inhibiting protein synthesis will also cause heart contraction disorders. In addition, the patient also found abnormalities of mitral

regurgitation (mitral leakage), causing left ventricular dilatation.



Picture 1. Pathogenesis of Dilated Alcoholic Cardiomyopathy

3. Clinical Manifestation

The prominent clinical feature of dilated cardiomyopathy is congestive heart failure, which develops gradually in most patients. In some cases, atypical chest pain symptoms are often found, while typical cardiac chest pain is not common. If there are complaints of typical chest pain, it is thought that there may be concurrent systemic heart disease. As a result of systemic arrhythmias and emboli, syncope is quite common. In advanced disease, chest pain secondary to pulmonary embolism and abdominal pain due to congestive hepatomegaly may also be found (Wynne J, 2005).

Complaints often arise gradually, even most initially

asymptomatic, although left ventricular dilatation has occurred for months or even years. In hypertrophic cardiomyopathy, rhythm disturbances are common and cause palpitations, dizziness, and syncope. Systolic blood pressure may drop. Most cases are asymptomatic. Older people with hypertrophic cardiomyopathy often complain of shortness of breath due to heart failure and bothersome angina pectoris with atrial fibrillation. In advanced cases, the mitral valve can even be hardening/stiffening, which can give symptoms of mitral stenosis or regurgitation (Wynne J, 2005).

While in restrictive cardiomyopathy, patients often feel weak and short of breath. Found signs of right heart failure. Also signs and symptoms of systemic diseases such as amyloidosis and hemochromatosis (Wynne J, 2005).

4. Treatment

Management aims to improve quality of life by reducing complaints and complications, limiting symptoms, slowing disease progression, and preventing sudden death. Initial management should focus on the airway, respiratory rate, and circulation. Gastric decontamination is rarely required for

all alcohols. Treatment for acute ethanol intoxication alone is usually symptomatic. Hypoglycemia and respiratory depression are two critical problems that must be addressed immediately. Hypoglycemia should be detected immediately from a rapid bedside blood glucose measurement in all intoxicated patients and must receive a dextrose infusion. Patients in a coma should receive at least 100 mg of parenteral thiamine to prevent or treat Wernicke's encephalopathy and dextrose. Intravenous (IV) crystalloids and vasopressor are used to treat hypotension if present. Patients may experience changes in consciousness such as restlessness, rudeness, and uncooperativeness. Chemical sedation such as benzodiazepines may be needed to prevent the patient from harming themselves or others. However, this drug should be used with caution because it can worsen respiratory depression caused by alcohol. Metadoxine is a specific new drug that is useful in treating acute alcohol poisoning, accelerating the excretion of Ethanol (Nasution SA, 2017).

Treatment of restrictive cardiomyopathy is generally tricky because this disease is not efficient to treat and also depends on the

accompanying disease. Antiarrhythmic drugs are given if there is a rhythm disturbance. Generally, arrhythmias can cause sudden death—insertion of a pacemaker for severe conduction disorders (Nasution SA, 2017).

Spontaneous improvement or stabilization may occur in about a quarter of patients with dilated cardiomyopathy. Death is due to heart failure, ventricular tachyarrhythmias, or ventricular bradyarrhythmias. Anticoagulation should be considered if systemic embolism is possible. Standard therapy for heart failure is sodium restriction, ACE inhibitors, diuretics, and digitalis resulting in symptomatic improvement. In dilated cardiomyopathy secondary to hypertension or valvular disease, afterload reduction is best achieved by adding hydralazine or nitrates to the standard treatment regimen for congestive heart failure.

B. Theory of Alcoholic Cardiomyopathy According to Islamic View

Khamr is any intoxicating drink, whether wine or cooked or not. Alcohol is a general term for any organic compound with a functional group called a hydroxyl group (-OH) attached to a carbon atom. Islamic teachings aim to

maintain the safety of religion, soul, mind, lineage, and property. For this reason, everything that provides benefits for achieving these goals is ordered, recommended, or permitted to be done, while those who are disadvantaged are not recommended. Drinking a drink that destroys the human mind, such as alcohol, is haraam. Islam strictly forbids khamr and gambling for all Muslims based on the texts of the Qur'an and hadith (MUI, 2009).

As in the word of God in the letter Al-Baqarah verse 168:

يَأْتِيهَا النَّاسُ كُلُّوْا مِمَّا فِي الْأَرْضِ حَلَالًا طَيِّبًا وَلَا تَتَّبِعُوا خُطُوَاتِ الشَّيْطَانِ إِنَّهُ لَكُمْ عَدُوٌّ مُّبِينٌ ﴿١٦٨﴾

Which has meaning:

O humankind, eat what is lawful and good from what is on the earth, and do not follow the devil's steps; for verily the devil is a real enemy to you (Surah Al-Baqarah, 168).

Based on the verse above, Allah encourages his people to eat halal and good food and leave the haram, which is forbidden is khamr. Allah commands Muslims to stay away from khamr because it is rijsun (dirty) and contains many losses in the form of loss of mind and turn away from Allah (Yusuf, 2011).

As in the word of God in the letter An-Nisa verse 43:

يَتَأْتِيهَا الَّذِينَ ءَامَنُوا لَا تَقْرَبُوا الصَّلَاةَ وَأَنتُمْ سُكَرَىٰ حَتَّىٰ تَعْلَمُوا مَا
تَقُولُونَ

Which has meaning:

You who believe, do not pray while you are drunk so that you understand what you are saying (Surah An-Nisa 43).

Although the verse contains a prohibition against drinking liquor, because it has not been stated explicitly, there are still many people who consume it, so that one day it causes a commotion and a fight. Then came down QS. Al-Maidah: 90, which strictly forbids drinking alcohol.

As in the word of God in the letter Al-Maidah verse 90-91:

أَيُّهَا الَّذِينَ ءَامَنُوا إِنَّمَا الْخَمْرُ وَالْمَيْسِرُ وَالْأَنْصَابُ وَالْأَزْلَامُ رَجَسٌ مِّمَّنْ عَمِلَ الشَّيْطَانِ
أَحْبَبْتُه لِعَلَّكُمْ تُفْلِحُونَ ﴿٩٠﴾ إِنَّمَا يُرِيدُ الشَّيْطَانُ أَنْ يُوقِعَ بَيْنَكُمُ الْعَدَاةَ وَالْبَغْضَاءَ فِي
قَهْرٍ وَالْمَيْسِرِ وَيَصُدَّكُمْ عَنْ ذِكْرِ اللَّهِ وَعَنِ الصَّلَاةِ ۖ فَهَلْ أَنْتُمْ مُنْتَبِهُونَ ﴿٩١﴾

Which has meaning:

You who believe, verily (drinking) khamr, gambling, (sacrificing for) idols, drawing fate with arrows are among the devil's actions. So stay away from it so that you get good luck. Indeed, the devil intends to create enmity and hatred between you because it can prevent you from remembering Allah and praying; then stop you (from doing the work) (Surah Al-Maidah 90-91).

People who are used to drinking khamr will always do this; they will not hesitate to steal, rob, and commit other crimes to vent their dependence (Yusuf, 2011).

In general, drinking alcohol damages all organs of the body gradually as a result of acute brain disorders (intoxication, delirium) or chronic (ataxia, motor disorders), liver inflammation (liver cirrhosis), stomach bleeding, sex hormone disorders and immunity, and bias. It results in alcoholic cardiomyopathy, which can result in death due to loss of heart contraction so that the heart cannot pump.

Following are the words of the Prophet Muhammad SAW:

عن ابن عمر ان رسول الله صلى الله عليه وسلم قال كل مسكر خمر وكل مسكر حرام

Which has meaning:

From Ibn Umar R.A. that the prophet Muhammad SAW said: every intoxicating object is khamr, and every intoxicating object is haram" (HARI. Muslim).

Conclusion

Cardiomyopathy is a heart muscle function disorder characterized by the loss of the ability of the heart muscle to pump blood so that the blood supply is not optimal and results in death. The most common cause is chronic alcohol consumption,

which causes dilatation of the heart muscle. At the same time, alcohol is an ingredient that is forbidden to be consumed by Muslims because of its more significant impact.

Reference

- Dolinak., David., M. Evan., L. Emma. 2005. *Forensic Pathology: Principles and Practice*. Elsevier Academic Press. California.
- Idris, Ahmad. 1996. *Fiqh al Syafi'iyah*. Widjaya. Jakarta.
- Kadar, M. Y. 2011. *Tafsir Ayat Ahkam*. Sinar Grafika Offset. Jakarta.
- Kraut, J. A., Kurtz, I. 2008. Toxic Alcohol Ingestions: Clinical Features, Diagnosis, and Management. *Clinical Journal of the American Society of Nephrology : CJASN* 3(1): 208-225.
- Nasution SA. 2017. Kardiomiopati. In *Buku Ajar Ilmu Penyakit Dalam Jilid III*. Editor Sudoyo A. W., Setiyohadi, B., Alwi, I., Simadibrata, MK, Setiati. S. Departemen Ilmu Penyakit Dalam Fakultas Kedokteran Universitas Indonesia. Jakarta.
- Ram, P., Lo, K. B., Shah, M. 2018. National Trends in Hospitalizations and Outcomes in Patients with Alcoholic Cardiomyopathy. *Clin Cardiol* 41: 1423.
- Taylor, R. B. 2005. *Taylor's Cardiovascular Diseases: A Handbook*. Springer Science. United States of America.
- Wynne, J., Braunwald, E. 2005. Cardiomyopathy and myocarditis. In *Harrison's Principles of Internal Medicine 17th Edition*. Editor Kasper, D. L. The McGraw-Hill Companies. USA.