

Module: Introduction to Physiology

Module code: BMHP5003

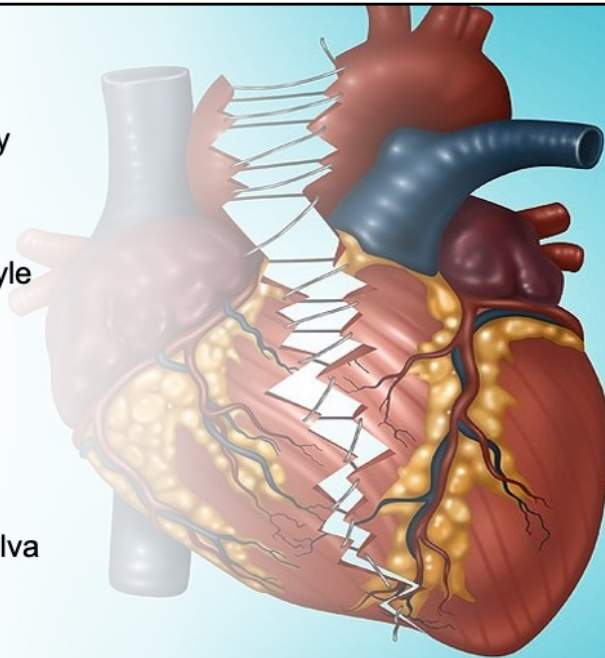
Assessment: Case study on lifestyle related disease

Topic: Broken heart syndrome

Student Name: Adriana Ribeiro Silva

Student ID Number: 2008480

Lecturer: Dr Laila Surani



Introduction

- Aims

- *The aim is to explore the lifestyle related disease that could be a factor that affects and influence an individual's health and wellbeing.*

- (tutor2u, 2022)

- *The lifestyle related disease is cardiomyopathy also known as "Broken Heart Syndrome". Cardiomyopathy is a disease which causes the heart muscle to become bigger, thicker or stiff.*

(Health, 2022)



- The Department of Health & Social Care measure lifestyle-related health information for a range of different purposes, including:

- Monitoring changes in health and lifestyles.

- Monitoring the prevalence of specific health conditions.

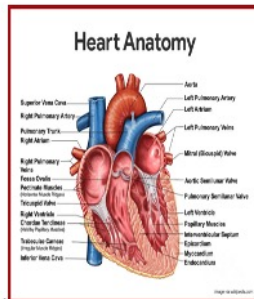
- (NHS Digital, 2022)

Broken heart syndrome, also known as stress cardiomyopathy, occurs when a person experiences sudden acute stress that can rapidly weaken the heart muscle.(Wittstein, 2022) It is a disease that can cause rapid and reversible heart muscle weakness.(Wittstein, 2022)

Anatomy and physiology of the cardiovascular system

- The heart is made up of four chambers:
- Two upper chambers known as
- The left atrium.
- The right atrium.

- Two lower chambers:
- The left ventricle.
- The right ventricle.



- The heart is made of two major arteries:
 - Left main coronary artery. (LMCA)
 - Right coronary artery (RCA)
- (BELLEZA, 2021)

- The heart beats or contracts, the blood makes continuous round trips- into and out of the heart, through the rest of the body, and then back to the heart- only to be sent out again.



- *The green arrows show blood flow through the heart.*

(BELLEZA, 2021)

The heart is located between the lungs in the middle of the chest, behind and slightly to the left of your breastbone. (Texas Heart Institute, 2022) The heart is divided into four chambers. Which consists of two chambers on the top (atrium, plural atria) and two on the bottom (ventricles), one on each side of the heart. (Cleveland Clinic, 2022) Right atrium large veins deliver oxygen-poor blood to the right atrium. Right ventricle: The lower right chamber pumps the oxygen-poor blood to the lungs through the pulmonary artery, with lungs reloading blood with oxygen. Left atrium after the lungs fill blood with oxygen, the pulmonary veins carry the blood to the left. Left ventricle: The left ventricle is slightly larger than the right. It pumps oxygen-rich blood to the rest of your body. (Cleveland Clinic, 2022) The heart receives its own supply of blood from the coronary arteries. The arteries and their branches supply all parts of the heart muscle with blood. The left main coronary artery are circumflex artery, left anterior descending artery (LAD), the left coronary then supply blood to the left atrium, side and back of the left ventricle (Cleveland Clinic, 2022).

The right Coronary Artery (RCA) which consists of right atrium, right ventricle, bottom portion of both ventricles and back of the septum. (Cleveland Clinic, 2022)

Physiology of the heart the conduction system includes several components. The first part of the conduction system is the sinoatrial node. Without any neural stimulation, the sinoatrial node rhythmically initiates impulses 70 to 80 times per minute. Because it establishes the basic rhythm of the heartbeat, it is called the pacemaker of the heart. Other parts of the conduction system include the atrioventricular node, atrioventricular bundle, bundle branches, and conduction myofibers. All these components coordinate the contraction and relaxation of the heart chambers.(National Cancer Institute, n.d.)The cardiac cycle refers to the alternating contraction and relaxation of the myocardium in the walls of the heart chambers, coordinated by the conduction system, during one heartbeat.(National Cancer Institute, n.d.) The heart sounds is associated with the heartbeat which due to vibrations in the tissues and blood caused by closure of the valves.(National Cancer Institute, n.d.) the heart rate, the sinoatrial node, acting alone, produces a constant rhythm of the heart rate. Regulating factors are reliant on the atrioventricular node to increase or decrease the heart rate to adjust cardiac output to meet the changing needs of the body.(National Cancer Institute, n.d.)

Lifestyle questionnaire of patient A

- ☐ Alcohol intake information
- ☐ Family history (Inherited or health condition)
- ☐ Medical history
- ☐ Ethnicity background
- ☐ Age Group
- ☐ Gender

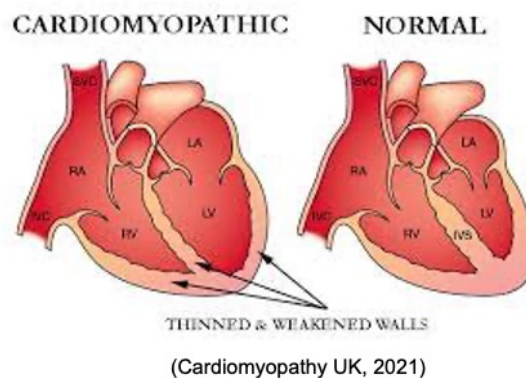
Lifestyle health- related information of patient A

- Patient A does not smoke
- Immense alcohol intake per day. (3,4 times a day)
- Patient A does not have a relative who suffers from a heart condition suffered from a heart condition in the past, neither is inherited
- Patient A is suffering from cardiomyopathy
- Black Caribbean background
- 34 years old
- Female

The health risks in terms of lifestyle or health behavior choices of Patient A

- Congestive heart failure
- Low blood pressure.
- Shock
- Potentially life-threatening heart rhythm abnormalities.

(Broken Heart Syndrome, 2022)



Other possible complications or health risk of broken cardiomyopathy include, family history of cardiomyopathy, heart failure and sudden cardiac arrest, long-term high blood pressure, conditions that affect the heart, including a past heart attack, coronary artery disease or an infection in the heart (ischemic cardiomyopathy) obesity, which makes the heart work harder, long-term alcohol misuse, Illicit drug use, such as cocaine, amphetamines and anabolic steroids, treatment with certain chemotherapy drugs and radiation for cancer.(Mayo Clinic Staff, 2022)

Recommendations for improving or managing the care of Patient A

According to NHS it is recommended to:

Eat a healthy diet.

Do gentle exercise.

Manage stress.

Quit smoking.

Avoid or reduce intake of alcohol.

(NHS Choices, 2019)



- According to NHS, get plenty of sleep(as well as diagnose and treat any underlying sleep apnoea) manage stress well, make sure any underlying condition, such as diabetes, is well controlled and kept under control and its also recommended to lose weight.(if you're overweight) (NHS Choices, 2019)

Conclusion

- In conclusion to stay active you must follow all the healthy lifestyle choices:
- Taking steps to manage emotional stress can improve heart health and may help prevent broken heart syndrome.
- Staying active and maintaining a healthful diet are two ways to protect the heart, take steps to look after the heart and guidance how to manage the condition and live a healthy life by determining its causes in order to prevent it.
- Avoiding stressful situations if possible is always recommended, and interventions to reduce stress such as meditation, physical rehabilitation or yoga can be very helpful to an individual with this syndrome.

References

- Harvard Health Publishing (2020). *Takotsubo cardiomyopathy (broken-heart syndrome) - Harvard Health*. [online] Harvard Health. Available at: <https://www.health.harvard.edu/heart-health/takotsubo-cardiomyopathy-broken-heart-syndrome> [Accessed 28 Mar. 2022].
- Kenhub (n.d.). *Heart*. [online] Kenhub. Available at: <https://www.kenhub.com/en/library/anatomy/heart> [Accessed 31 Mar. 2022].
- Mayo Clinic Staff (2022). *Broken heart syndrome - Symptoms and causes*. [online] Mayo Clinic. Available at: <https://www.mayoclinic.org/diseases-conditions/broken-heart-syndrome/symptoms-causes/syc-20354617> [Accessed 29 Mar. 2022].
- National Cancer Institute (n.d.). *Physiology of the Heart | SEER Training*. [online] Cancer.gov. Available at: <https://training.seer.cancer.gov/anatomy/cardiovascular/heart/physiology.html> [Accessed 30 Mar. 2022].
- BELLEZA, M. (2021b). *Cardiovascular System Anatomy and Physiology: Study Guide for Nurses*. [online] Nurseslabs. Available at: <https://nurseslabs.com/cardiovascular-system-anatomy-physiology/> [Accessed 31 Mar. 2022].

- NHS Choices (2019). *Cardiomyopathy*. [online] NHS. Available at: <https://www.nhs.uk/conditions/cardiomyopathy/> [Accessed 25 Mar. 2022].
- NHS Digital. (2022). *Health Survey for England - Health, social care and lifestyles*. [online] Available at: <https://digital.nhs.uk/data-and-information/areas-of-interest/public-health/health-survey-for-england---health-social-care-and-lifestyles>.
- Shor Wittstein, I. (2022). *Broken Heart Syndrome*. [online] www.hopkinsmedicine.org. Available at: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/broken-heart-syndrome> [Accessed 1 Apr. 2022].
- tutor2u (2022). *Lifestyle factors | Topics*. [online] tutor2u. Available at: <https://www.tutor2u.net/hsc/topics/lifestyle-factors> [Accessed 30 Mar. 2022].
- www.cardiomyopathy.org. (n.d.). *Homepage*. [online] Available at: <https://www.cardiomyopathy.org> [Accessed 1 Apr. 2022].
- Health, S.V.H. (2022). *St Vincent's Heart Health*. [online] www.svhhearthealth.com.au. Available at: <https://www.svhhearthealth.com.au/conditions/cardiomyopathy#section-1> [Accessed 1 Apr. 2022].
- Cleveland Clinic (2022). *Heart: Anatomy and Function*. [online] Cleveland Clinic. Available at: <https://my.clevelandclinic.org/health/body/21704-heart>.
-