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Association of Anger Score with the Development of Left Ventricular Hypertrophy: An Observational Study

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Abstract

Aim: The present study was undertaken to observe the correlation between the development of left ventricular hypertrophy (LVH) and anger score and its implication in outcome of surgical cases. **Methods: Study design:** This was a observational study. **Study population:** A total of 40 male and female patients in the age group of 30–60 years and those admitted to the cardiac center were enrolled in the study. Novaco anger inventory short form was used in the study. **Results and Discussion:** Socio-demographic data of participants are presented in Tables 1-3. Table 4 presents the frequency distribution of the degree of LVH among patients. Table 5 presents frequency distributions of levels of anger among patients. Table 6 presents the correlation between Anger and LVH among patients. The value of R = 0.9524. This is a strong positive correlation, which means that high anger variable scores go with high LVH (and vice versa). The value of R2, the coefficient of determination, is 0.9071. **Conclusion:** There is a strong positive correlation, which means that high anger variable scores go with high LVH. Further detailed studies recommended understanding the relationship between these two variables so that it can be recommended to manage anger also in patients with cardiac disorders along with regular treatment. These principles are to be used as guiding principles in pre-operative screening of patients with comorbidities posted for surgery in the planning processes.

Keywords: Anger, Cardiac disease, Psychological parameters, Stress, Surgery out come

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Introduction

Throughout the world, there is an increase in mortality due to cardiovascular diseases.[1] Although this is a non-communicable disease, it has overtaken communicable diseases. Further, the burden of cardiovascular diseases was expected to rise in upcoming years. It was expected that by 2030, the burden of cardiovascular disease increases to 23.6 million.[2] According to American Psychological Association, anger is an emotional state characterized by antagonism towards something wrong or someone.[3] Earlier studies reported that on average the person with anger was 3 times more prone to develop coronary disease than normal individuals.[4] The mechanism of action of anger may be through the sympathetic nervous system. During anger, the sympathetic system is activated and causes the secretion of hormones that have a direct action on the heart and blood vessels. On the heart, it increases the force of contraction and heart rate. On the blood vessels, it causes vasoconstriction and an increases in the resistance and consecutively the blood pressure.[5] When the individual undergoes emotion of anger regularly, the stress response also triggered regular basis and leads to a consistent increase in the workload on the heart that causes failure of the heart.[6] The present study was undertaken to observe the correlation between the development of the left ventricular hypertrophy (LVH) and anger score.

Materials and Methods

Study Design

This was a observational study.

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Study Setting

The study was conducted at Government Medical College and General Hospital, Anantapuramu, Andhra Pradesh.

Study Population

A total of 40 male and female patients within the age group of 30–60 years and those admitted to the cardiac center were enrolled in the study. Patients who underwent echocardiography and can understand the Telugu language and willing to join the study were included in the study. Participants with severe complications were excluded from the study. Detailed information was provided to each patient about the study and informed consent was obtained before the study. Socio-demographic data of the patients were collected and anger levels were assessed and correlated. The study protocol was approved by the institutional human ethical committee.

Table 1: Socio-demographic data of participants (*n*=40)

Gender	*Frequency*	*Percentage*
Male	21	52.5
Female	19	47.5

Data were presented as frequency and percentage

Table 2: Socio-demographic data of participants (*n*=40)

Employment status	*Frequency*	*Percentage*
Employed	22	55
Unemployed	18	45

Data were presented as frequency and percentage

Table 3: Socio-demographic data of participants (*n*=40)

Age-wise distribution	*Frequency*	*Percentage*
30–40	8	20
40–50	16	40
50–60	6	15

Data were presented as frequency and percentage

Table 4: Frequency distribution of degree of LVH among patients (*n*=40)

LVH	*Frequency*	*Percentage*
No LVH	4	10
Mild LVH	22	55
Moderate LVH	10	25
Severe LVH	4	10

Data were presented as frequency and percentage, LVH: Left ventricular hypertrophy

Table 5: Frequency distribution of levels of anger among patients (*n*=40)

Anger	*Frequency*	*Percentage*
Mild	9	22.5
Moderate	21	52.5
Severe	10	25

Data were presented as frequency and percentage

Table 6: Correlation between anger and LVH among patients (*n*=40)

Variables	*Frequency*	*Percentage*
Anger LVH	0.9524	

LVH: Left ventricular hypertrophy

Assessment of Anger

Novaco anger inventory short form was used in the study.[7-9]

Data Analysis

Data were analyzed using SPSS 20.0 version. Socio-demographic data were analyzed using frequency and percentage. Association of anger with LVH was analyzed using Pearson's correlation.

Results

Socio-demographic data of participants are presented in Tables 1-3. Table 4 presents the frequency distribution of the degree of LVH among patients. Table 5 presents frequency distributions of levels of anger among patients. Table 6 presents the correlation between anger and LVH among patients. The value of R = 0.9524. This is a strong positive correlation, which means that high anger variable scores go with high LVH (and vice versa). The value of R2, the coefficient of determination, is 0.9071.

Discussion

The present study was undertaken to observe the correlation between the development of LVH and anger score. There is a strong positive correlation, which means that high anger variable scores go with high LVH. Psychological parameters such as stress and anger can harm the heart and contribute to the development of LVH.[10,11] Effective stress reduction techniques are recommended in the management of LVH.[12] Some studies showed the effectiveness of stress management in the management of patients with cardiovascular disorders.[13]

Earlier studies reported that anger has a strong correlation with the development of cardiovascular diseases.[14,15] There will be activation of the sympathetic adrenomedullary axis and stress axis during the period of anger or rage. There will be the release of stress hormones during anger and influence the heart and blood vessels. On the blood vessels, it causes severe vasoconstriction and an increase in blood pressure which is unwanted. If the same individual undergoes episodes of anger every day, there will be raise in the blood pressure daily and sustained elevated blood pressure causes excessive load on the heart and causes the development of cardiovascular disorders. Further, there will be an increase in the rate of the heart along with a rise in blood pressure. The present study results support earlier studies as we have observed a strong positive correlation, which means that high anger variable scores go with high LVH. Further detailed studies recommended understanding the relationship between these two variables so that it can be recommended to manage anger also in patients with cardiac disorders along with regular treatment.

Conclusion

There is a strong positive correlation, which means that high anger variable scores go with high LVH. Further detailed studies recommended understanding the relationship between these two variables so that it can be recommended to manage anger also in patients with cardiac disorders along with regular treatment. This issue to be considered while doing pre-operative assessment for taking up cases for surgery in the broader interest of the patient.

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