Original Research Article

TO DETERMINE THE LEVEL OF VITAMIN D IN ST SEGMENT ELEVATED MYOCARDIAL INFARCTION PATIENTS AND TO COMPARE IT WITH HEALTHY INDIVIDUALS

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Abstract:

Background & Method: The aim of the study is to determine the level of Vitamin D in ST segment elevated myocardial infarction patients and to compare it with healthy individuals. Anthropometric indices including height and weight were taken while subjects were in the standing position and wearing light clothing without shoes. Body weight and height were measured in kilograms and in centimeters, respectively. Body mass index (BMI) was calculated as weight (kilo- grams) divided by height squared.

Result: 24% of cases were associated with positive family of CAD whereas 4% of controls were associated with positive family history of CAD. 58% of cases were vitamin D deficient while 22% were insufficient.

Conclusion: Patients of ST segment elevated MI had significantly low level of vitamin D as compared to individuals without coronary artery disease. Vitamin D deficiency was found to be an independent predictor of CAD after adjusting other risk factors emphasizing that vitamin D deficiency can be a potential risk factor for CAD. In our study we found that vitamin D shows inverse association with coronary artery disease. Hence, our study suggests that vitamin D might be considered as one of the risk factor for cardiovascular events.

Keywords: Vitamin D, myocardial infarction & healthy.
Study Designed: Observational Study.

1. Introduction

Coronary artery disease (CAD) is one of the major life threatening diseases and has emerged as a major cause of death worldwide. The situation in India is especially gruesome with limited resources for setting up an effective screening program and evaluation or management and India to be the leader in the world for CAD associated mortality in the next 15–20 years.

CHD can develop at any age. It refers to a group of closely related syndromes caused by an imbalance between the myocardial oxygen demand and the blood supply. Depending on the rate severity of coronary artery narrowing and the myocardial response, one of four syndromes may develop: angina pectoris (chest pain), acute myocardial infarction, sudden cardiac death and chronic ischemic heart disease with congestive heart failure.

The most common cause of CHD is narrowing of the lamina of the coronary arteries by atherosclerosis. Initially, an area of atheromatous plaque forms in the coronary artery. Atherosclerotic plaque rupture or erosion, with differing degrees of superimposed thrombosis and distal embolization, results in myocardial under perfusion, and represents the main pathophysiological mechanism of ACS. The mechanism for plaque formation is unclear, although the predominant view is that lipid accumulates under the lining of the coronary artery.

2. Material & Method

The present study included 100 cases of diagnosed acute coronary artery disease patients aged between 20 to 60 years admitted in Amaltas Institute of Medical Sciences, Dewas M.P. for **0**6 months and TMT negative matched for age and sex. Informed written consent was taken from all the subjects. Anthropometric indices including height and weight were taken while subjects were in the standing position and wearing light clothing without shoes. Body weight and height were measured in kilograms and in centimeters, respectively. Body mass index (BMI) was calculated as weight (kilo- grams) divided by height squared.

Excluded from the study were subjects with
1. Vitamin D supplementation.
2. Congestive heart failure
3. Significant chronic liver disease

3. Results

Table 1: Basic characteristics

Parameters	(Mean±SD)	(Mean±SD)	P value
Age	46.7±10.3	44.3±11.1	0.266
BMI	25.9±4.75	22.8±3.42	0.001
Pulse	81.6±17.4	75.8±4.04	0.025
SBP	126.7±24.6	116.5±8.47	0.007
DBP	85.7±13.0	74.7±4.76	0.000

Mean age of the cases were 46.7±10.3 and that of controls were 44.3±11.1. Mean BMI of cases were 25.9±4.75 and of control were 22.8±3.42. SBP and DBP were show significant correlation.

Table 2: Distribution of Study population according to the physical Activity

Physical Activity	No.	%	No.	%
Sedentary	62	62.0	42	42.0
Low	20	20.0	32	32.0
Medium	16	16.0	20	20.0
High	02	2.0	06	6.0

62% and 20% of cases were sedentary and low level activity respectively, compared to 42% and 32% of controls who were sedentary and low level activity respectively.

Table 3: Distribution of Study population according to the family history of CAD

Family History of CAD	No.	%	No.	%
No	76	76	96	96
Yes	24	24	04	4
Total	100	100	100	100

24% of cases were associated with positive family of CAD whereas 4% of controls were associated with positive family history of CAD.

Table 4: Comparison of serum vitamin D level in study population

Vitamin D Level	No.	%
Deficiency	48	58
Insufficiency	22	22
Sufficiency	20	20
Total	100	100

This table shows that 58% of cases were vitamin D deficient while 22% were insufficient.

4. Discussion

In a research conducted by Thomas on the survivors of the Framingham study, the risk of cardiovascular disease was estimated 1.62. The findings of both of these studies suggested that vitamin D deficiency can be associated with a high risk of cardiovascular disease. Several mechanisms may explain the association between vitamin D and cardiovascular disease. Decholecalciferol regulates renin-angiotensin axis through the suppression of the renin gene. A change of 25- hydroxycholecalciferol causes changes in the smooth muscle of the vascular wall and also inflammation and thrombosis and that could explain cardiovascular complications.

In our study the mean age of the patients was 47.8±10.3 years, the mean age of patients was 52.24±8.24 years and in the study of Manoj et al.   The mean age was 56.96±6.52 years.

The incidence of myocardial infarction increases fivefold between the age ranging from 40-60. Related to gender, among CHD cases 80% and 20% were men and women respectively, and the approximately same percentage of men and women were among controls; the result didn't reach statistical significance.

The prevalence of male CHD patient was twice as high as women, 110 and 50 respectively in study. In addition, men are much prone to develop atherosclerosis and its consequences than women.

The preponderance of men in the present study among the cases of CHD comes in agreement with AHA (2013a) and WHF (2013) which specified in their publications that men have a greater risk of heart attack and CVD than pre-menopausal women do.

5. Conclusion

Patients of ST segment elevated MI had significantly low level of vitamin D as compared to individuals without coronary artery disease. Vitamin D deficiency was found to be an independent predictor of CAD after adjusting other risk factors emphasizing that vitamin D deficiency can be a potential risk factor for CAD. In our study we found that vitamin D shows inverse association with coronary artery disease. Hence, our study suggests that vitamin D might be considered as one of the risk factor for cardiovascular events.

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