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A Study Of Anti-Beta 2-Glycoprotein 1 Antibodies Levels In Acute Myocardial Infarction In Tertiary Care-K.R.Hospital, Mysuru

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Abstract

Background

Myocardial infarction is a thrombotic disorder with high incidence in western society[4.]MI is associated with many riskfactors.The frequency of anti-beta2 glycoprotein antibodies ,as well as their role in patients with acute myocardial infarction,has been a controversial issue and the exact role and clinical significance of anti-beta2 GP1 antibodies in MI pathogenesis is doubtful.Our study provides a complete profile of anti-beta2 antibodies in patients with acute MI,analyses their frequency in patients with MI and raises the possibility that anti beta2 GPI antibodies act as independent risk factor.

Aim and Objectives

To determine whether high levels of anti-beta 2- glycoprotein are associated with increase in the risk of acute myocardial infarction.

To associate between the known risk factors for AMI and antibody levels.

Methodology

All admitted patients under medicine department at Krishna Rajendra Hospital attached to Mysore Medical College and Research Institute, Mysuru ,fulfilling the inclusion and exclusion criteria subjects were taken for study. Data was collected using a pretested proforma meeting the objectives of the study. Detailed history, clinical examination and necessary investigations were done.MI was diagnosed using the guideines of ACC/AHA. Anti-beta 2 glycoprotein antibody levels were done and correlated with the test subjects.

Results

In this study there was male preponderance with 58% and females constituted 42%.Most of the cases were in the age group of 41-50 years (38%), which constitutes primarily middle aged population. Most of the cases presented as STEMI about 38 in no. Anti-beta 2 glycoprotein antibody levels were seen in female preponderance with 67% and in the age group less than 40yrs,who mostly presented as STEMI.

Conclusion

Young <40yrs aged female with few or no comorbities ,presenting with clinical features of MI,anti-beta 2 glycoprotein antibody levels gives us some clue about association of MI and autoimmunity**.**

Keywords: Myocardial Infarction;Anti-beta2glycoprotein antibody levels; Riskfactors; Autoimmunity.

Introduction

Myocardial infarction is a thrombotic disorder with high incidence in western society.

13.7% of all deaths are due to Ishemic Heart Disease,ie.,7.38 million deaths.No 1 leading cause in both men and women[4].Coronary Vascular Diseases,especially Coronary Heart Disease are epidemic in India.

The Registrar General of India reported that Coronary Heart Disease led to 17% of total death and 26% of adult deaths in 2001-2003 which increased to 23% of total and 32% of adult deaths in 2010-2013[5].In India, more than 10.5 million deaths occurs annually and it was reported that CVD led to 20.3% of death in men and 16.9% of all deaths in women.[5]

It is usually caused by the formation of occlusion thrombi on atherosclerotic lesions.Adhesion of platelets to ruptured atherosclerotic plaques is a multistep process involving von will brand factor and the glycoprotein 1b.[6]Adhesion of platelets to VWF is hampered implying a role of beta 2GPI in platelet adhesion and thus in the development of arterial thrombosis.[6]

The frequency of anti-beta2 glycoprotein antibodies ,as well as their role in patients with acute myocardial infarction, has been a controversial issue and the exact role and clinical significance of anti-beta2 GP1 antibodies in MI pathogenesis is doubtful.

Our study provides a complete profile of anti-beta2 antibodies in patients with acute MI, analyses their frequency in patients with MI and raises the possibility that anti beta2 GPI antibodies act as independent risk factor.

Objectives Of The Study

1. To determine whether high levels of anti-beta 2- glycoprotein are associated with increase in the risk of acute myocardial infarction.
2. To associate between the known risk factors for acute myocardial infarction and antibody levels

Materials And Methods

1. **Type of study-** Observational study
2. **Study duration**-Total duration of study is 18months from January 2018 to June 2019
3. **Source of data-**

Primary source of information in the department of general medicine at K.R.Hospital Mysuru.Subjects admitted for acute myocardial infarction will be followed up till discharge.

Secondary source of information from published articles,journals,books,case sheets,discharge summary,related websites are used in planning, developing synopsis and during dissertation as supporting documents.

1. After taking informed consent from the patient, history and clinical examination of all selected patients was done according to the performa with in 7days of presentation
2. Complete hemogram,random blood sugar,renal and liver function tests,lipid profile were performed
3. Clinical history suggesting of MI,12 lead ECG is taken, cardiac biomarkers like Troponin T levels are done,2 D ECHO done
4. Anti beta 2 glycoprotein antibody Ig G and IgM levels are done
5. All the data will be expressed as mean+/- standard deviation
6. Statistical analysis will be performed by using SPSS
7. Statistical significance will be shown by Chi-square test.Variables were considered to be significant if $p<0.05$

Inclusion Criteria

Subjects older than 18years with acute myocardial infarction,who were admitted to K.R.hospital within the first 7days of symptom onset

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Exclusion Criteria

Infective endocarditis

Infection by HIV or treponemapallidum

Heriditary causes of thrombosis

Antiphospholipid syndrome or another disease of the connective tissue

Neoplasias(current or past)

Thromboembolic Pulmonary Hypertension

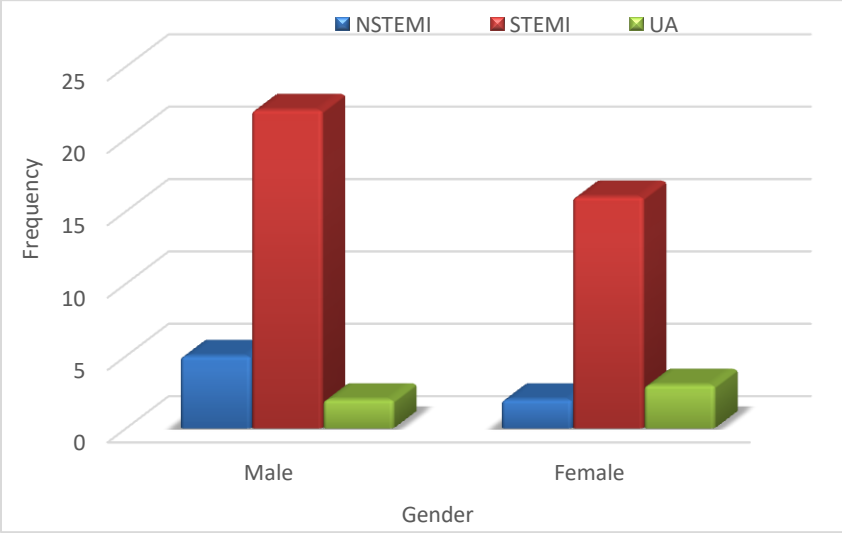
Results And Analysis

Gender Distribution

Out of 50 patients studied,29 were male and 21 female. male to female ratio is 1.3

STEMI and NSTEMI more in males,Unstable angina more in females with a ratio of 1.5.

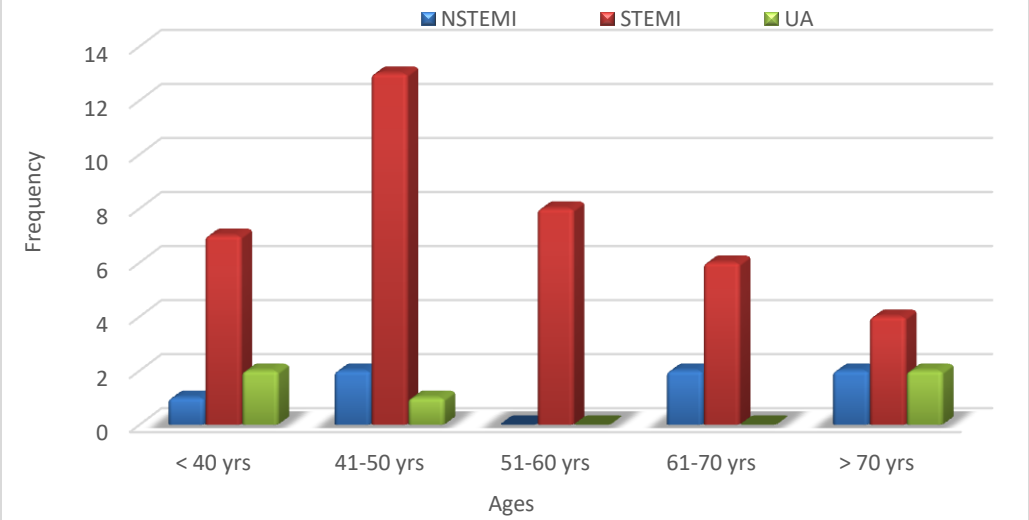
Figure 1: Gender distribution of MI



Age Distribution

Maximum number of subjects (32%) were found in the age group of 41-50yrs,max number had STEMI (38 in number).

Figure 2: Age distribution of MI



Test Values

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Correlation of ant-beta 2glycoprotein 1 antibodies with myocardial infarction.

Table 1: Disease correlation with testvalue

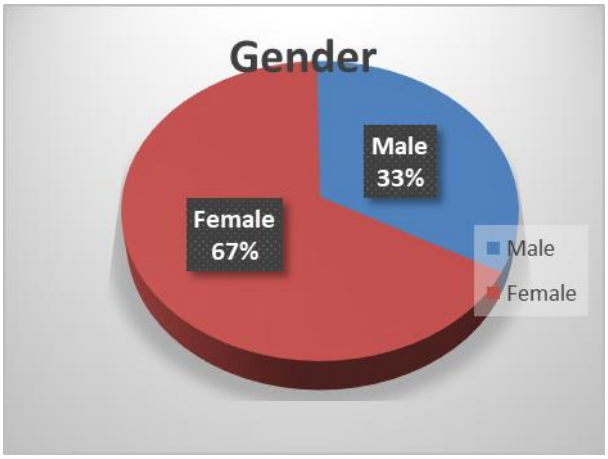
	NORMAL	INCREASED
STEMI	27	10
NSTEMI	5	3
Unstable Angina	3	2

Increased levels of anti beta 2 glycoprotein levels were seen in 15 patients of MI about 30% Out of which 10 were STEMI (20%), 3 NSTEMI (6%)and 2 UA(4%)

Sex Distribution

Out of the 15patients,who had increased levels of anti beta2 glycoprotein levels 67% are females and 33% are males.

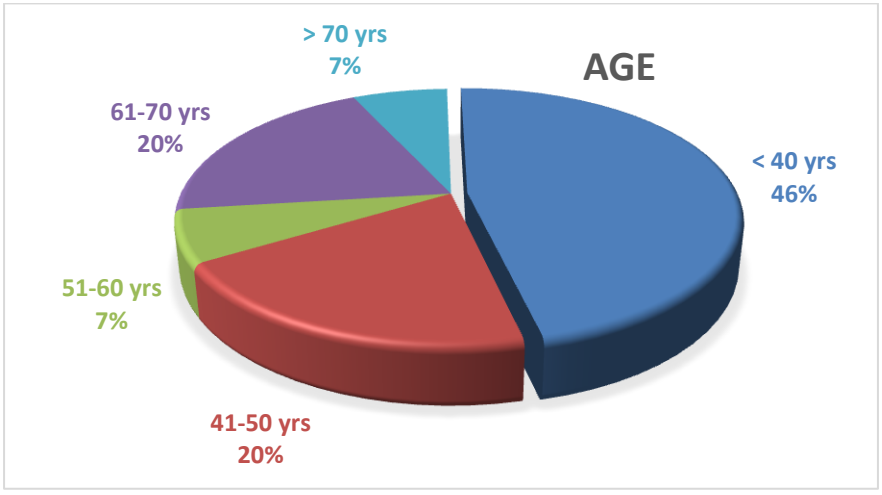
Figure 3: Sex distribution with test value



Age Distribution

Increase beta 2 glycoprotein levels were seen in the age group usually <40yrs

Figure 4: Age distribution with test value



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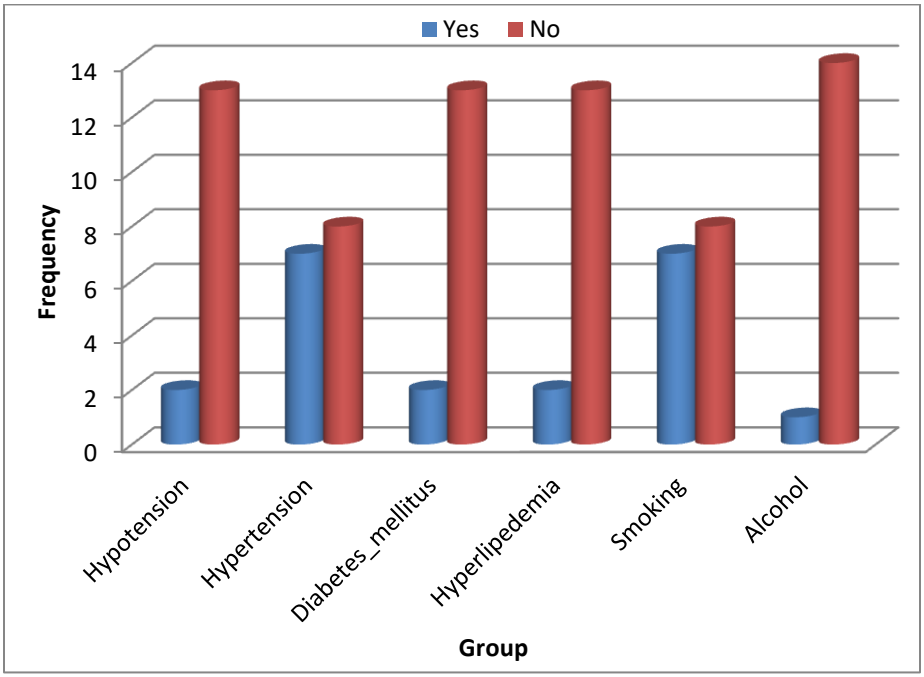
Riskfactor Distribution

Smoking and Hypertension were associated with increased levels of anti beta 2 glycoprotein ab levels.

Table 2:Riskfactor analysis with test value

RISKFACTORS	NUMBER	%
Hypertension	7	46%
Diabetes mellitus	2	13%
Dyslipidemia	2	13%
Smoking	7	46%
Alcohol	1	7%

Figure 5: Riskfactor analysis with test value



Symptom Analysis

Patients who presented with chestpain and fatigue had increased levels of anti beta2 glycoprotein antibody levels

Table 3: Symptom analysis with test value

	NUMBERS	**%**
Chest pain	10	66%
Palpitation	1	7%
Breathlessness	3	20%
Vomiting	4	26%

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Fatigue	7	46%
Loss of consciousness	1	7%

Discussion

Age distribution compared to other studies

The mean age in this study group was 48.6yrs compared to Philip.G etal whose mean age is 56yrs and Aline Ranzolin et al., whose mean age is 57yrs .

Table 14: Age distribution compared to other studies

STUDY	MEAN AGE in yrs
Present study	44.6yrs
Philip.G et al.,(2009)	56yrs
Aline Ranzolin et al.,(2004)	57.7yrs

Sex distribution compared to other studies

Ratio of male to female population in this study was 1.3

Table 15: Sex distribution compared to other studies

STUDY	MALE : FEMALERATIO
Present study	1.3
Aline ranzolin et al.,	2.01

Anti-Beta2 glycoprotein antibodies in different studies

Table 16: Anti-beta2 GPI antibody in different studies

STUDIES	%
Present study	30%
Philip.G.de et al.,	16%
P.L. Meroni et al., (2007)	22%

In this study, ANTI-BETA 2 GLYCOPROTEIN antibodies were seen in 30% of the MI patients of whom majority were females and in the age group <4oys of age.

Philip.G.de et al.,study and P.L. Meroni et al., study showed 16% and 22% respectively.

Association of Riskfactors with the test value

- Philip G de etal.,:the presence of DM,HTN and high levels of cholestrol was associated with higher beta2 glycoprotein antibody levels
- Aline ranzolin et al: history of DM and previous heart disease were most consistent association with test values

Table 17: Association of riskfactors with test value

RISKFACTORS	PRESENT STUDY

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Hypertension	46%
Diabetes mellitus	13%
Smoking	46%

Conclusion

Myocardial infarction is a thrombotic disorder with high incidence and is one of the leading causes of death and is associated with many riskfactors.

Present study was conducted by including 50 subjects of Myocardial Infarction, who were admitted from 1st January 2018 to 30th June 2019(18 months),fulfilling the inclusion and exclusion criteria subjects were taken for study.Informed written consent obtained from all subjects.

Data was collected using a pretested proforma meeting the objectives of the study. Detailed history, clinical examination and necessary investigations RBS,LFT,Lipid profile,Renal function test, CB,ECG,2DECHO ,Troponin T were done. Anti-beta 2 glycoprotein antibody levels were measured using ELISA method.

Anti-beta 2 glycoprotein antibody levels were seen in female preponderance with 67% and in the age group less than 40yrs,who mostly presented as STEMI.The riskfactors associated with increased levels of anti-beta 2 GPI were smoking and hypertension.

Since most of the patient's are associated with other riskfactors ,there are many confounding factors which acts as a limitation.

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