

ASSESSMENT OF HYPERFIBRINOGENEMIA IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION FOR A POSSIBLE RISK FACTOR**P. Murugesan* and L. Madhan**

Department of Physiology and Pharmacology, Coimbatore Medical College, Coimbatore, Tamilnadu.

***corresponding author: Dr. P. Murugesan**

Department of Physiology and Pharmacology, Coimbatore Medical College, Coimbatore, Tamilnadu.

Article Received on 30/09/2016

Article Revised on 21/10/2016

Article Accepted on 11/11/2016

ABSTRACT

Hyperfibrinogenemia is a condition where increase in plasma fibrinogen level was observed. The present study was aimed to assess the plasma fibrinogen level in patients with acute myocardial infarction. The study also focuses on the relation of plasma fibrinogen level to the etiology and prognosis of acute myocardial infarction. A group consisted of 50 patients in the age group of 40-65 years diagnosed with myocardial infarction associated with various risk factors were taken for the study. Rapid turbidimetric method was adopted for the estimation of fibrinogen. Uniform elevation of plasma fibrinogen was observed in patients with acute MI regardless of age, sex and other risk factors. The study results revealed that hyperfibrinogenemia is an important risk factor of acute MI and hence routine clinical investigations and measurement of plasma fibrinogen concentration may be carried out in patients with acute MI.

KEYWORDS: Fibrinogen, hyperfibrinogenemia, acute myocardial infarction, risk factor.**INTRODUCTION**

Myocardial infarction is one of the most common conditions^[1] in hospitalised patients in industrialized countries, where 32.4 million people are reported to be affected by MI worldwide. Correlation studies reported that coronary heart disease is more prevalent in north Europe compared to south Europe and found to be low in Japan. In India prevalence is found to be high in Chandigarh. Till 2001 not much importance is given to plasma fibrinogen level and its measurement and it was seldom done in routine clinical investigations. Many studies like North Wick Park Heart Study; PROCAM study; GRIP's study; Gothenberg study and Framingham study are available to consider fibrinogen levels as a risk factor in cardiovascular diseases. A study in India suggested that fibrinogen levels increase in haemorrhagic and ischemic stroke conditions.^[2,3] Ernst et al^[4] in 1994 described that fibrinogen may play emerging role as a cardiovascular risk factor. Hence the present study was undertaken to assess whether the hyperfibrinogenemia is an important risk factor or not in patients that may cause coronary thrombosis which may lead to acute myocardial infarction.

MATERIALS AND METHODS

The study was done at Government Rajai Hospital, Madurai attached to Madurai Medical College, Madurai. The study group consists of 50 patients with 42 males and 8 females. The acute MI of the patients was diagnosed based on history symptoms signs, clinical examination and ECG changes. Patients with all risk

factors like smoking, hypertension, hypercholesterolemia, diabetes mellitus and obesity were considered. Among 50 patients with acute MI, 38 patients had full thickness infarction of which 18 had anteroseptal infarction, 11 had anterolateral infarction, 9 had interior wall infarction and the rest had anterior sub-endocardial infarction. Blood samples for fibrinogen estimation were taken on the 1st and 7th day of hospital stay.

Rapid turbidimetric method was adopted for the two samples collected on 1st and 7th day for the estimation of fibrinogen level. Heparinised plasma of the patients (0.2 ml) was washed with 3-8 ml of freshly prepared 12.5% sodium sulphite solution. Shaken well and allowed to stand for 10 minutes. Shaken again and read the turbidity. Turbidity of protein standards were also measured for comparison. Plasma fibrinogen level for control group also determined.

RESULTS**Table 1: Fibrinogen levels**

	Age	Weight	Height	Sample 1	Sample 2
Mean	52.98	69.20	163.92	338.90	334.52
S.D	6.93	7.41	5.97	31.57	31.60

Table 2. Fibrinogen levels in various age groups

Age group in Years	Plasma fibrinogen level mg/dl	
	Sample 1	Sample 2
40-50	338.64	334.64
51-60	339.95	333.11
61-65	337.33	333.01

Table: 3 Fibrinogen level in male and female group

Sex	Plasma fibrinogen level mg/dl	
	Sample 1	Sample 2
Male	339.23	335.02
Female	337.01	331.87

Table:4. Fibrinogen level with various risk factors

Risk factors	Plasma fibrinogen level mg/dl	
	Sample 1	Sample 2
Smoking	340.34	336.21
Hypertension	337.95	333.36
Diabetes Mellitus	341.36	336.94
Hypercholesterolemia	333.30	327.50
Obesity	329.16	325.60
Smoking & hypertension	348.80	346.01
Smoking & diabetes mellitus	353.66	349.33
Smoking, hypertension and diabetes mellitus	335.50	330.10
Obesity, hypertension and diabetes mellitus	318.01	314.01

DISCUSSION

In the present study 50 patients diagnosed with acute MI were assessed whether plasma fibrinogen level is an important risk factor and to find out the role of hyper fibrinogenemia as an important cause for coronary thrombosis that might lead to acute MI. Plasma fibrinogen level was uniformly elevated in all age group of patients and the elevation was found to be independent of age. Similarly plasma fibrinogen level was uniformly elevated in both sex group of patients and the elevation was found to be independent of sex. Elevated plasma fibrinogen level was observed in patients with various risk factors revealed hyper fibrinogenemia is an important risk factor for acute MI. Among the 50 patients 14 of them had developed complications and the mean plasma fibrinogen was found to be 385.71 mg/dl, which was significantly higher than the mean plasma fibrinogen level in patients without complications which is found to be 320.66 mg/dl.

CONCLUSION

Elevated plasma fibrinogen level was observed in patients with acute MI regardless of age, sex and various risk factors. This emphasis that hyperfibrinogenemia is an important risk factor for acute MI. Hence assessment of plasma fibrinogen concentration is also to be included along with other clinical investigations for acute MI.

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