

A STUDY OF SERUM COPEPTIN LEVEL IN ACUTE MYOCARDIAL INFARCTION

ABSTRACT

INTRODUCTION:

Acute Myocardial Infarction is the well known cause for morbidity and mortality in the world wide. AMI is a clinical cardiac event due to prolonged myocardial ischemia and necrosis. Myocardial ischemia defines reduced oxygen and nutrient supply to the cardiac myocytes due to decreased perfusion.

The diagnosis is done by symptoms, signs and electrocardiogram findings, but in some patients, it is not possible. Rapid diagnosis of these patients helps to direct further management. Early diagnosis leads to proper treatment in time and also it prevents complications, thereby improving patients outcome.

Cardiac biomarkers namely, Cardiac Troponin and CK-MB are available for detection of myocardial necrosis. These markers are released only after myocardial necrosis occurs. Delay in release of these markers affects the management. Therefore, cardiac markers with pathophysiology independent of myocardial necrosis might improve rapid diagnosis of AMI.

COPEPTIN (CT-pro-vasopressin) is a new recently tested bio marker of acute endogenous (haemodynamic) stress. COPEPTIN is 39 amino acids glycopeptide and secreted with arginine vasopressin (AVP) and it is released from the hypothalamus together in stoichiometric pattern from stimulation of AVP release.

The present study aims to evaluate the serum levels of COPEPTIN as an early marker in AMI, since AMI is an acute stress condition.

AIM:

To estimate the serum level of COPEPTIN in patients with Acute Myocardial Infarction within four hours of onset of chest pain.

OBJECTIVES:

1. To correlate the S.COPEPTIN level with S.CK-MB.
2. To evaluate the correlation between S.COPEPTIN and other several known risk factors for AMI such as Random Blood Sugar, Blood.Urea, S.Creatinine and Lipid profile (S.Total Cholesterol, S.Triglycerides, S.HDL-C, S.LDL-C, S.VLDL).
3. To prove the use of S.COPEPTIN as an early marker of AMI.

MATERIALS AND METHODS

The study was conducted in Thanjavur Medical College, Thanjavur. 50 patients with symptoms of Acute Myocardial Infarction presented within 4 hrs of onset of pain in the casualty with ECG findings correlated and were taken as subjects. 50 age and sex matched controls were taken as control group. The following parameters were estimated immediately after the serum separation.

1. Serum COPEPTIN
2. Serum Creatine Kinase -MB
3. Random Blood Sugar
4. Blood Urea
5. Serum Creatinine
6. S.Total Cholesterol

7. S.Triglycerides.

8. S.HDL cholesterol

CALCULATED PARAMETERS :

1. Body Mass Index:(BMI) = Weight in Kg/(Height in meters)

2. S.Very Low Density Lipoprotein =TGL/5

3.S.Low Density Lipoprotein =T.Chol – (LDL +VLDL)

ESTIMATION OF SERUM COPEPTIN :

Serum COPEPTIN was measured in all the samples within one month of collecting the samples by Sandwich Enzyme – Linked Immuno Sorbent Assay.(ELISA)

RESULTS:

A total of 100 participants were included in the study. Out of these, 50 were grouped under control and 50 were under cases.

The serum value of Copeptin, S.CK-MB, Random blood sugar, B.Urea,S.Creatinine,S.Total Cholesterol, S.HDL and S.TGL were estimated for all the samples in both the groups. BMI, S.VLDL, and S.LDL were calculated. In this study,the mean value of serum COPEPTIN (62.5 ± 46.44 ng/L) was significantly higher than that of healthy controls (34.8 ± 13.4 ng/L).The mean S.CK-MB (16.08 ± 10.71) level in the study group was significantly higher than in control group (9.68 ± 3.86). But , CK-MB did not increase significantly as S. COPEPTIN increased in the

early hours of AMI. Pearson correlation analysis also showed significant correlation between S.COPEPTIN with S.CK-MB.

The mean S.total cholesterol level in the study group (201.5 ± 34.9) was higher than the control group (179.8 ± 14.5) which was statistically significant. The mean serum HDL-C which is lower in the study group compared to the control group (34.7 ± 3.4 versus 38.4 ± 5.7) which was statistically significant ($p < 0.0001$). The mean values of S.LDL-C, S.VLDL, and S.TGL are also significantly increased in the study group than the control group .

This study shows that serum levels of COPEPTIN are high in patients with AMI at very early stage.

CONCLUSION:

COPEPTIN is a new bio marker of acute endogenous (haemodynamic) stress. In AMI, which is an acute stressful state, S.COPEPTIN level rises. Measurement of S.COPEPTIN helps to diagnose AMI in Emergency Department before the onset of necrosis.. Measuring S.COPEPTIN along with ECG and other markers improves the diagnostic sensitivity of the method.

S.COPEPTIN can be used as a novel early marker in patients with AMI. Hence, earlier diagnosis helps in reducing the morbidity and mortality from AMI.

KEYWORDS

Acute Myocardial Infarction, Arginine VasoPressin, COPEPTIN, CK-MB-Creatine Kinase MB isoform, S.HDL, S.LDL, S.VLDL.