Research Article

# A comparative study on serum high sensitivity C - reactive protein and serum lactate dehydrogenase in acute myocardial infarction

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## Abstract

C - reactive protein is a substance that is present in the sera of acutely ill patients and that is able to bind to somatic C-polysaccharide on the cell wall of streptococcus pneumonia. Development of assays capable of accurate measurement of CRP with concentration as low as 0.5mg/L are referred to as High-Sensitivity CRP (hs-CRP) assays. Lactate dehydrogenase enzyme is a tetramer consisting of 2 subunits H and M. There are 5 different Isoenzyme forms present in all individuals.LDH -1($H_4$) is significantly present in cardiac tissue and can be easily measured in the serum of Acute Myocardial Infarction. The purpose of the study is to compare and correlate the serum levels of High Sensitivity C-Reactive protein and Serum Lactate Dehydrogenase in Acute Myocardial Infarction. **AIM:** To compare and correlate between the elevation of serum hs-CRP and the elevation of serum lactate dehydrogenase in Acute Myocardial infarction (AMI). **Materials and Methodology:** Serum levels of hs-CRP and LDH were measured and compared in blood samples collected within 6-12 hrs after the onset of chest pain in AMI patients. Estimation of serum hs-CRP was done by Immunoturbidimetric assay in Random access analyzer. Estimation of LDH was done by UV kinetic assay in Random access analyzer. **Result and Discussion:** Serum hs-CRP and Serum LDH were estimated in Acute Myocardial Infarction and the results were analyzed. The mean level of hs-CRP in AMI was 8.20mg/L and the mean level of LDH in AMI was 133.24U/L. In Acute Myocardial Infarction significant increase in hs-CRP was noticed whereas there was no such increase in Serum Lactate Dehydrogenase. Since the blood was taken within 6-12 hrs of after the onset of chest pain, the level of LDH is not likely to increase. The serum level of LDH increase only 12hrs after the onset of chest pain in Acute Myocardial Infarction and the fact is proved in this study. **Summary and Conclusion:** Present study reveals that hs-CRP levels are higher within 6-12 hrs of onset of chest pain in AMI where as serum lactate dehydrogenase does not increase within 6-12 hrs of onset of chest pain in AMI. Hence in AMI with in 6hrs serum hs-CRP can be used as an inflammatory marker where as serum LDH cannot be used.

**Keywords: AMI** (Acute Myocardial infarction), **LDH** (Lactate dehydrogenase), **hs-CRP** (High Sensitivity C-Reactive Protein)

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## INTRODUCTION

Acute Myocardial Infarction, even in present days holds the first place for the highest mortality. Studies have proved that atherosclerosis is not simply a disease of lipid deposition but local and systemic inflammation play a pivotal role in atherothrombotic inception and progression. C-reactive protein, a well-known marker of systemic inflammation and infection received much attention after the development of high sensitivity assays. In the study of Doggen *et al* and in the study of Dedobbeleer hs-CRP is associated with significant increase in the occurrence of Acute Myocardial

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Infarction. Lactate dehydrogenase enzyme is a tetramer consisting of 2 subunits H and M. There are 5 different Isoenzyme forms present in all individuals.LDH -1($H_4$) is significantly present in cardiac tissue and can be easily measured in the serum of Acute Myocardial Infarction. The purpose of the study is to compare and correlate the serum levels of High Sensitivity C-Reactive protein and Serum Lactate Dehydrogenase in Acute Myocardial Infarction.

## AIM

To compare and correlate between the elevation of Serum hs-CRP and the elevation of Serum Lactate Dehydrogenase in Acute Myocardial infarction (AMI).

## MATERIALS AND METHODS

Study population comprised of 50 patients with Acute Myocardial Infarction diagnosed by H/O characteristic chest pain, ECG changes and elevated CK-MB. Patients who were critically ill, who underwent recent surgical procedures, who had recent infectious disease and others with concomitant systemic diseases like Rheumatic disease, chronic liver disease, renal disorders, cancer and sepsis were excluded. Blood samples were collected from patients with Acute Myocardial Infarction within 6-12hours of the onset of chest pain after getting informed consent from them. Sample was estimated for hs-CRP (Immunoturbidimetric assay) and LDH (UV-kinetic method) in a Fully Automated Random Access Chemistry Analyzer.

## RESULTS

### MEAN VALUE OF hs-CRP IN CASES

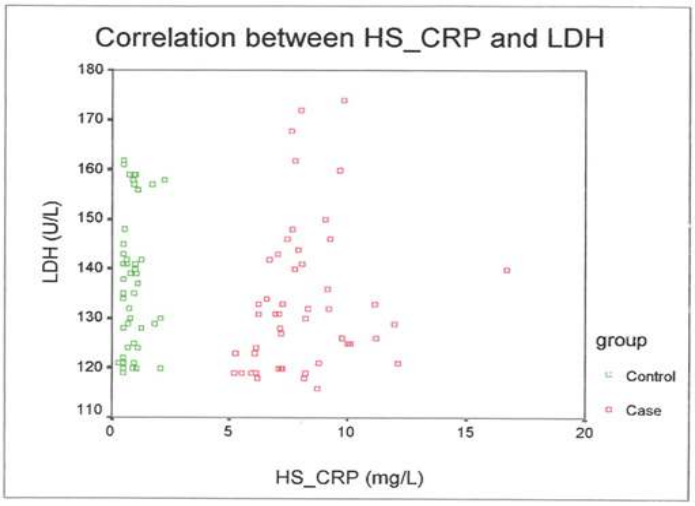
**Table 1:** Measurement of hs-CRP done by Immunoturbidimetric Method

| Parameter | Cases mg/dl |
|---|---|
| hs-CRP | 8.20+/-2.O9 |

### MEAN VALUE OF LDH IN CASES

**Table 2:** Measurement of LDH done by UV-Kinetic Method

| Parameter | Cases IU/L |
|---|---|
| LDH | 133.24+/-14.64 |




## DISCUSSION

Serum hs-CRP and Serum LDH were estimated in Acute Myocardial Infarction and the results were analyzed. The mean level of hs-CRP in AMI was 8.20mg/L+/-2.O9 and the mean level of LDH in AMI was 133.24U/L+/-14.64. In Acute Myocardial Infarction significant increase in hs-CRP was noticed whereas there was no such increase in Serum Lactate Dehydrogenase. Since the blood was taken within 6-12 hrs of after the onset of chest pain, the level of LDH is not likely to increase. The serum level of LDH increase only 12hrs after the onset of chest pain in Acute Myocardial Infarction and the fact is proved in this study.

## CONCLUSION

This study reveals that hs-CRP levels are higher within 6-12 hrs of onset of chest pain in AMI where as serum lactate dehydrogenase does not increase within 6-12 hrs of onset of chest pain in AMI. Hence in AMI with in 6hrs serum hs-CRP can be used as an inflammatory marker where as serum LDH cannot be used. The study has generated the scope to relate serum levels of hs-CRP with other cardiac markers like CK-MBand Aspartate Transaminase (AST) in Acute Myocardial Infarction.

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