

A study of C-reactive protein in acute ischemic stroke

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Abstract

Background and Objective: Cerebrovascular accident, which has considerable mortality and morbidity, deserves attention towards its prevention. The line of defence in stroke prevention are detecting and adequately treating manageable risk factors. C-reactive protein, an acute phase reactant is an indicator of underlying systemic inflammation and a novel marker is an indicator of underlying systemic inflammation and a novel marker for atherothrombotic disease. Present study is an attempt to study the levels of c-reactive protein in acute ischemic stroke. **Methods:** It is a cross sectional study of 50 patients with diagnosis of first ever ischemic stroke (<72 hrs) in Vinayaka mission medical college, Karaikal. Patients were examined and investigated as per proforma. **Results:** In our study 29(58%) patients who had CRP>0.6mg/dl. The mean CRP was 0.7164mg/dl which is statistically significant. **Interpretation and Conclusion:** C-reactive protein appears to be an important risk factor for acute ischemic stroke at levels >0.6mg/dl

Key Words:

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Received Date: 12/02/2018 Revised Date: 10/03/2018 Accepted Date: 25/03/2018

DOI: <https://doi.org/10.26611/1021612>

Access this article online

Quick Response Code:



Website:

www.medpulse.in

Accessed Date:
02 April 2018

INTRODUCTION

Stroke is the rapid development of a focal neurological deficit caused by a disruption of blood supply to the corresponding area of brain. Stroke is also a leading cause of functional impairments. With 20% of survivors requiring institutional care after 3 months and 15% to 30% being permanently disabled. Inflammation is important in ischemic stroke, both in the development of atherosclerosis and during the ischemic event. Elevated levels of C-Reactive protein (CRP) are present among patients at risk for further first ever stroke.

MATERIAL AND METHODS

It is a cross sectional study of 50 patients conducted in Vinayaka mission medical college, Karaikal.

Inclusion Criteria: All the patients of first ever CT proven ischemic stroke admitted within 72 hours of symptom onset.

Exclusion Criteria: Patients with following conditions, identified by history, clinical examination and investigations are excluded from the study

1. Valvular heart disease
2. Women on oral contraceptives
3. Ischemic heart disease
4. Atrial fibrillation
5. Acute infectious disease
6. Osteoarthritis, costochondritis, rheumatoid arthritis, ankylosing spondylitis and other disorders
7. Known or suspected neoplastic disorders
8. Recent (less than 3 months) major trauma, burns, surgery.
9. Patients with ischemic stroke after 72 hours of symptom onset

Statistical Analysis: Data was statistically analysed

RESULT

In our study 29 (58%) patients who had CRP>0.6 mg/dl. The mean CRP was 0.7164mg/dl which is statistically significant.

Table 1: Showing C-reactive protein distribution among both the sexes

C-Reactive Protein	Males	Females	Total
>0.6mg/dl	21(42%)	8(16%)	29(58%)
<0.6mg/dl	10(20%)	11(22%)	21(42%)

Table 2: Correlation between CRP and diabetes mellitus

Crp	Diabetes Mellitus	Non Diabetes Mellitus
>0.6mg/dl	11(22%)	18(36%)
<0.6mg/dl	6(12%)	15(30%)
Total	17(34%)	33(66%)

Table 3: Correlation between CRP and systemic hypertension

CRP	Hypertensive	Normotensive
>0.6mg/dl	19(38%)	10(20%)
<0.6mg/dl	15(30%)	6(12%)
Total	34(68%)	16(32%)

Table 4: Showing correlation between CRP and smoking

CRP	Smokers	Non Smokers
>0.6mg/dl	9(18%)	20(40%)
<0.6mg/dl	5(10%)	16(32%)
Total	14(28%)	36(72%)

Table 5: Showing correlation of LDL with CRP

CRP	Mean Of LDL	Total Number Of Patients
>0.6mg/dl	107.28	29(58%)
<0.6mg/dl	100.59	21(42%)

Table 6: Showing correlation of serum cholesterol with CRP

CRP	Mean Cholesterol	Total Numbers of Patients
>0.6mg/dl	182.57	29(58%)
<0.6mg/dl	177.30	21(42%)

Table 7: Showing correlation of triglycerides with CRP

CRP	Mean Serum Triglyceride	Total Number Of Patients
>0.6mg/dl	137.18mg/dl	29(58%)
<0.6mg/dl	160mg/dl	21(42%)

Table 8: Correlation of CRP with mean serum HDL

CRP	Mean HDL	Total Number Of Patients
>0.6mg/dl	47.25	29(58%)
<0.6mg/dl	46.5	21(42%)

1. In our study 17 (34%) patients were diabetic and 33 (66%) were non-diabetic. Among 29 patients with CRP>0.6mg/dl, 11(3.93%) were diabetic, 18 (62.06%) were non-diabetic. Among 21 patients with CRP<0.6mg/dl, 6 (28.57%) were diabetic and 15(74.42%) were non-diabetic.

2. In our study 34 (68%) patients were hypertensive and 16 (32%) were normotensive. Among the 29 patients with CRP>0.6mg/dl, 19 (65.51%) were hypertensive and 10 (34.48%) were normotensive. Among 21 patients who had CRP<0.6mg/dl, 15 (71.42%) were hypertensive and 6 (28.57%) were normotensive.
3. In our study 14 (28%) were smokers and 36(72%) are non smokers. Among the 29 patients with CRP>0.6mg/dl, 9(31%) were smokers and 20 (68.9%) were non smokers. Among 21 patients with CRP<0.6mg/dl, 5(23.80%) were smokers and 16(76.19%) were non smokers.
4. In our study the mean of LDL was higher (107.28) in patients who had CRP>0.6mg/dl than those with CRP<0.6mg/dl (100.59).
5. In our study the mean serum cholesterol was higher in patients with CRP>0.6mg/dl(182.57) than those with CRP<0.6mg/dl (177.30).
6. In our study the mean serum triglycerides level was lower (137.18) in patients with CRP>0.6mg/dl than in patients with CRP<0.6mg/dl(160mg/dl).
7. In our study the mean HDL in patients with CRP>0.6mg/dl was higher(47.25) than patients with CRP<0.6mg/dl(46.5).

DISCUSSION

The present study is a hospital based, cross sectional study with 50 patients.

- Among the 50 patients, 31(62%) were males and 19(38%) were females
- The mean age of patients was 60 years
- The most common mode of presentation of CVA in our study was hemiplegia/paresis that occurred in 48(96%) of patients, followed by cranial nerve involvement in 47(94%), aphasia in 25(50%), seizures in 3(6%), altered sensorium in 2(4%) and headache in 1(2%)
- Cases constituting 12% had history of TIA in the past, among which 8% were males and 4% were females
- The most common risk factor in our study was systemic hypertension 34(68%), followed by diabetes mellitus in 17(34%) and smoking in 14(28%).

CONCLUSION

CRP appears to be an important risk factor for acute ischemic stroke at levels of >0.6mg/dl.

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Source of Support: None Declared
Conflict of Interest: None Declared

