ORIGINAL RESEARCH PAPER

Cardiology

KEY WORDS:

CORRELATION AND RISK STRATIFICATION OF hsCRP WITH IDENTICATION OF COMPLEX CULPRIT LESIONS IN UNSTABLE ANGINA

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INTRODUCTION:

Unstable angina and Non ST segments elevation Myocardial infarction remain leading cause of morbidity and mortality worldwide. C reactive protein is a sensitive early marker of inflammation can identify complex culprit lesion in unstable angina as inflammation has been implicated in the pathophysiology of vulnerable coronary placques. Identification of high risk category with hs CRP may explore aggressive interventional approach over conservative treatment.

AIM:

Following parameters were analysed =- quantification of hs CRP,clinical profile, angiographic correlation of CAD with hs CRP levels, clinical outcome in selected population

METHODOLOGY:

Those patients with Unstable anginal class III admitted in the coronary care unit at the dept of cardiology, Madras medical college, Chennai between July 2019 to Dec 2019 were enrolled in our study with routine medical treatment with Heparin, antiplatelets, statin and beta blockers, ACE blockers. Apart from continuous monitoring, routine serial investigation of CK & CKMB at 6,12,24 hrs CRP estimated using nebulometric technique and then standardised. Those with myocardial infarction or recent history of MI,elevated cardiac enzymes, valvular heart disease, malignancies, infection, other inflammatory pathologies that lead to elevated CRP levels, pulmonary oedema on admission excluded from the study. Coronary angiographic lesions graded 1 to 4 according to severity of diameter stenosis[<50%,50-70%,>70% and 99%] and morphology of lesions as A,B1,B2,C graded from 1 to 4[according to ACC/AHA guidelines]. Complexity of culprit lesions graded as low[score less than 4], intermediate[4,5] and high grade[6 or more].Those patients with normal hs CRP levels[group I] compared with high hs CRP levels[Group2] in regard to complexity of culprit lesion anatomy with Fischer Exact test. Statistical comparison was two tailed and P value less than 0.05 was considered significant.

OBSERVATION AND RESULTS:

Table 1 showing baseline characteristics of group I with normal hs CRP levels and Group II with elevated hs CRP levels

Characters	Group I	Group II	P value
Total [92]	42[46%]	50[54%]	0.3230
Age[yrs]	49.7410.05	51.32 8.47	0.4147
Male70 [76%]	34[37%]	36[39%]	0.3393
Family h/o CAD28[30%]	12[13%]	16[17%]	0.5020
Smokers 62[67%]	28[30%]	34[37%]	1.0
Diabetes 34[37%]	16[17%]	18{20%]	1.0
Hypertension57[62%]	24[26%]	33[36%]	0.2930
Hyperlipidemia 44[48%]	18[20%]	26[28%]	0.4092
h/o cad 23[25%]	13[14%]	10[11%]	0.1613
Previous revascularisation	-	-	-

Table 2 showing clinical profile of group I & group II

Parameter	Group I[42]	Group II[50]	P value
Pulse rate	84.9 7.42	88.406.7	0.0053[S]
Systolic BP	138.9 11.29	142.2 13.43	0.2122
Diastolic BP	86.24 5.68	87.88 6.67	0.2117
ECG changes	12[14%]	30[33%]	0.0067
LV dysfunction	11[12%]	21[23%]	0.1290
Duration in CCU	1.02 0.15	2.08 0.85	0.0001[S]
TIMI risk score	2.17 1.08	2.28 0.76	0.5182

Table 3 showing distribution of coronary artery disease in Group I & Group II

CAD	GROUP 1 [42]	GROUP II [50]	TOTAL [92]	P VALUE
NO DISEASE	32[35%]	5[05%]	37[40%]	0.0001[S]
SINGLE VESSEL	4[04%]	16[17%]	20[22%]	0.0112[S]
TWO VESSEL	4[04%]	17[18%]	21[23%]	0.0061[S]
TRIPLE VESSEL	2[02%]	12[13%]	14[15%]	0.0174 [S]

Table 4 showing location of culprit lesion

CORONARY ARTERY	GROUP I [42]	GROUP II [50]	P VALUE
LAD	5 [5%]	25 [27%]	1.0
LCX	2 [2%]	6 [7%]	0.6273
RCA	3 [3%]	14 [15%]	1.0

Table 5 showing correlation of hs CRP and complexity of culprit lesions

COMPLEXITY	NORMAL hs CRP	ELEVATED hs CRP	TOTAL	P VALUE
NORMAL	32[35%]	5[5%]	37[40%]	0.0001[S]
LOW SCORE	7[7%]	12[13%]	19[20%]	0.4459
INTERMEDIATE	2[3%]	22[24%]	24[27%]	0.0001[S]
HIGH SCORE	1[1%]	11[12%]	12[13%]	0.0053[S]
ABNORMAL	10[11%]	45[49%]	55[60%]	0.0001[S]

Table 6 showing hs CRP correlation with severity of lesions in Group II

COMPLEXITY	CRP MEAN	STANDARD DEVIATION	CONFIDENCE INTERVAL 95%
LOW & NORMAL	5.425	1.779	4.477 TO 6.373
MEDIUM	6.435	2.086	5.53 TO 7.33
HIGH GRADE	8.745	1.496	7.741 TO 9.750

Table 7 showing correlation of CRP levels with clinical outcome of patient

OUTCOME	GROUP I	GROUP II	P VALUE
DEATH	NIL	NIL	
PTCA 9[10%]	1[1%]	8[9%]	0.0347[S]
CABG 6 [6%]	2[2%]	11[12%]	0.6845
READMISSION 13[14%]	2[2%]	11[12%]	0.0324[S]
UNSTABLE ANGINA7[7%]	1[1%]	6[6%]	
LV FAILURE	NIL	2[2%]	
MYOCARDIAL INFARCTION 4[4%]	1[1%]	3[3%]	

DISCUSSION;

Comparing study group with Group I as in Table 5,the difference was statistically significant in all categories and reflects usefulness of hs CRP in all categories of patients for identifying high grade complex lesions in unstable angina.

While analysing group II in regard to hs CRP levels and complexity of culprit artery lesions,observation in our study as per table 6 reaffirms that increasing hs CRP levels in patients with unstable angina identifies complex high grade culprit artery lesions While analysing outcome of both groups , the need for early revascularisation is high among those with elevated hs CRP levels and establishes the level of hs CRP is one of the important tool in risk stratification of Unstable angina.

LIMITATION:

Angiography offers only visual information and has limitations. Vulnerability of plaques to rupture is related to microscopic characteristics and some non critical appearing lesion may rupture. In this study, no study population with prior history of revascularisation included. False positive hs CRP can occur in diabetic population and occult infection that is common in unstable angina patients.

CONCLUSION:

Those with elevated hs CRP levels more than 3mgms per litre associated with high grade complex culprit lesion and in turn identified the need for early revascularisation and are associated with increased incidence of readmission, unstable angina ,Myocardial infarction and Acute LV failure.hs CRP should be included as important marker for risk stratification of Unstable angina and for aggressive early revascularisation strategy.

CONFLICT OF INTEREST:

There is no conflict of interest in this study

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