ORIGINAL RESEARCH PAPER

Cardiology

ANGIOGRAPHIC PROFILE IN UNSTABLE ANGINA AND NON-ST ELEVATION MYOCARDIAL INFARCTION IN SOUTHERN INDIAN POPULATION

KEY WORDS: **CAD**- coronary artery disease, **SVD**- single vessel disease, **DVD**- double vessel disease, **TVD**- triple vessel disease, **LMD**- left main disease.

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ABSTRACT

Introduction: Acute coronary syndrome (ACS) includes both ST elevation myocardial infarction (STEMI) and unstable angina & non-ST elevation MI (USA/NSTEMI). In western countries, USA/NSTEMI is the most common cause of ACS (60-70%), but in India, it contributes only 30-40% of ACS. Most of NSTEMI patients are likely to have multi-vessel disease. Our aim of the study is to evaluate the angiographic profile of coronary artery disease in USA/NSTEMI patients.

Materials & Methods: This is a single centered cross-sectional study – USA/NSTEMI ACS patients admitted to our hospital, who underwent diagnostic coronary angiogram (CAG) from the period of November 2017 to May 2018.

Results: Total of 182 USA/NSTEMI ACS patients has undergone CAG. Mean age of presentation was 53 ± 9.18. Out of 182 patients, 69% were male, 36.8% were diabetic, and 38.5% were systemic hypertension. Angiographic profile of CAD in our study was single vessel disease (SVD) was seen in 39%, double vessel disease (DVD) in 24.1%, triple vessel disease (TVD) in 18.1, left main disease (LM) in 11.5, minimal CAD in 10.9%, normal epicardial coronaries were seen in 8.2%. In our study, those patients with diabetes, elderly & LV dysfunction were more likely to have multi-vessel disease.

Conclusion: In our study angiographic profile of coronary artery disease in USA/NSTEMI was comparable to TACTIS –TIMI-18 trial. Diabetes, elderly and LV dysfunction are important predictors of multi-vessel disease in our study which will be useful prognostic marker for further risk stratification in USA/NSTEMI.

INTRODUCTION:

Acute coronary syndrome (ACS) includes both ST elevation myocardial infarction (STEMI) and unstable angina/non-ST elevation MI (USA/NSTEMI). In western countries, USA/NSTEMI is the most common cause of ACS (60-70%), but in India, it contributes only 30-40% of ACS[1]. Among USA/NSTEMI two third of them belongs to USA & remaining one third belongs to NSTEMI. NSTEMI patients are likely to be older, DM, CKD, prior MI, prior CAD, Prior CABG or PCI, peripheral vascular disease. Most of the NSTEMI patients will have multi-vessel disease rather SVD in STEMI patients. Short term mortality is more in STEMI patients (5-8%)[2] due to large area myocardium damaged when compared to NSTEMI, which is 3-5%[3]. While long term mortality is more with NSTEMI (30%)[4] due to the presence of multi vessel & more diffuse disease which increases future cardiovascular events. Our aim of the study is to evaluate the angiographic profile of coronary artery disease in USA/NSTEMI patients.

MATERIALS & METHODS:

This is a single centered cross-sectional study – USA/NSTEMI ACS patients admitted to our hospital-RGGGH, who underwent diagnostic coronary angiogram from the period of November 2017 to May 2018. USA/NSTEMI is diagnosed based on 3 features, 1-new onset (<1 month) at rest pain <20 minutes, 2-severe pain, 3- crescendo pain. Those patients without ST elevation in two contiguous leads, but with dynamic ST/T changes were included. When biomarkers (troponin T/I, CK-MB) are elevated NSTEMI is diagnosed, if biomarkers are negative USA is diagnosed. Then patients were risk stratified according to TIMI score, & GRACE score and classified into high, intermediate & low risk groups. Low-risk USA was not included in this study. Age <18 years, CKD, STEMI & CSA were excluded. Statistical analysis was done using students t testing using SPSS software and when p values < 0.05 then it is considered as statistically significant.

RESULTS:

Total ACS patients admitted in the study period includes both STEMI & USA/NSTEMI were 1512. Out of which 412 patients were USA/NSTEMI. CAG was done in 182 patients of USA/NSTEMI, out of which 41 patients were USA. Mean age of presentation were 53 ± 9.18 years

Chart-1. Baseline demographic characters
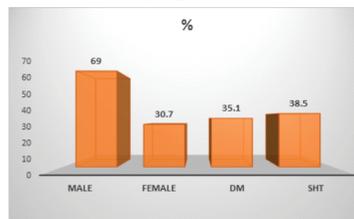
In Chart-1, out of 182 patients 69% were male, 35.1% were diabetic, and 38.5% were systemic hypertension.

Chart-2. Distribution based on LV ejection fraction
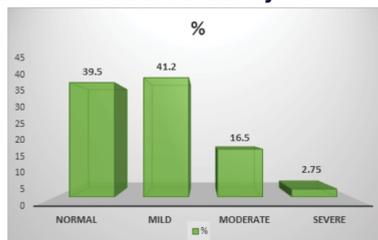
In our study, 39.5% were having Normal EF, 41.2% were having mild EF, 16.5% having moderate EF & 2.75% were having severe EF has depicted chart-2.

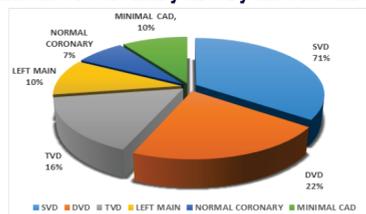### Chart-3. Extent of coronary artery disease involvement

Chart-3 shows Angiographic profile of CAD that includes single vessel disease SVD- 39%, double vessel disease DVD- 24.1%, triple vessel disease TVD- 18.1, left main disease LM- 11.5, minimal CAD was 10.9% & normal epicardial coronaries were 8.2%.

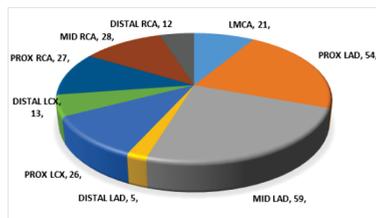### Chart-4. Pattern of coronary arterial segment involved

Chart-4 depicts out of 182 patients, 11.5% had LMCA, Proximal LAD-29.6%, Mid LAD-32.4%, Distal LAD-2.74%, Proximal LCX-14.2%, Distal LCX-7.1%, Proximal RCA-14.8% & Mid RCA- 15.3%, Distal RCA-6.5%.

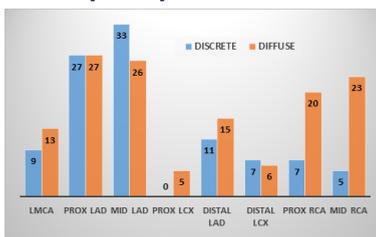### Chart-5. Coronary artery lesion characteristics

Chart-5 shows Coronary artery lesions characteristics which are divided into discrete and diffuse. Diffuse lesions are more seen in LMCA, proximal LCX, and proximal & distal RCA compared to discrete types.

Table-1. Influence of age on CAD

EXTENT OF CAD	<= 50 YEARS (N=66)	>50 YEARS (N=116)	P value
MVD	19 (28.8)	58 (50)	0.005
LMCA	5 (7.6)	16 (13.8)	0.20

Table-1 depicts, Elderly (>50 years) patients were more likely to have MVD (50%) (p<0.005) & LMCA disease (13%) compared to patients with age <50 years.

Table-2 Influence of DM on CAD

EXTENT OF CAD	WITH DM (N=64)	WITHOUT DM (N=118)	P value
MVD	33 (51.5)	30 (37)	0.0004
LMCA	10 (15)	8 (6.7)	0.05

Table-2 shows, Diabetic patients were more likely to have MVD (51.5%) (p<0.0004) & LMCA (15%) (p<0.05) compared to non-diabetic patients.

Table-3. Effect of CAD on LV function

CAD EXTENT	NORMAL/MILD (N=147)	MOD-SEVERE LV DYSFUNCTION (N=35)	P value
MVD	55 (37.4)	22 (62.8)	0.005
LMCA	15 (10.2)	6 (17.1)	0.24

Table-3 depicts those patients with moderate to severe LV systolic dysfunction were having more MVD (62.8%) (p<0.005) & LMCA (17%) compared to normal/mild LV systolic dysfunction.

DISCUSSION:

Acute coronary syndrome- USA/NSTEMI patients are more likely to have diffuse multi-vessel disease (double or triple vessel disease) & LMCA disease. In our study, out of 182 patients, single vessel disease SVD were seen in 39%, double vessel disease DVD in 24.1%, triple vessel disease TVD in 18.1, left main disease LM in 11.5, minimal CAD in 10.9%, normal epicardial coronaries were seen in 8.2%. Mostly the extent of disease was confined to LMCA, proximal LAD, LCX & RCA & most of them were having diffuse disease. In our study DM, elderly & moderate-severe LV systolic dysfunction were more likely to have multi-vessel disease. In TACTIS –TIMI-18 trial, angiographic profile in ACS-USA/NSTEMI were, 34% had triple vessel disease 28%- two vessel disease 26%- single vessel disease 10%- LMA occlusion 13%- no occlusion[5]. Our angiographic results were comparable to that of TACTIS –TIMI-18 trial.

CONCLUSION:

In our study angiographic profile of coronary artery disease in USA/NSTEMI was comparable to TACTIS –TIMI-18 trial. Diabetes, elderly and LV dysfunction are important predictors of multi-vessel disease in our study which will be a useful prognostic marker for further risk stratification in USA/NSTEMI.

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