Editorial

Always Clinical Comes Before Angiography

Jayaraman Balachander[1]

[1] Department of Cardiology and Medical Supdt (Retd), Jawaharlal Institute of Post-Graduate Medical Education and Research, Puducherry, India

Acute coronary syndrome (ACS) is assuming epidemic proportions in India. It is thought that by 2020, India, which has the dubious distinction of being the diabetic capital of the world, would also emerge as the coronary artery disease capital. In India, studies have reported that coronary heart disease (CHD) prevalence has witnessed a rapid increase from 1% to 9 to 10% in the urban population and 4 to 6% in the rural population.[1] Recently, the Global Burden of Diseases (GBD) study and India State-Level Disease Burden Initiative Collaborators have reported an annual incidence of ischemic heart disease (IHD) in India from the years 1990 to 2017[2]

ACS is the primary form of presentation of IHD and could be ST-elevation myocardial infarction (STEMI), non-ST-elevation myocardial infarction (NSTEMI), or unstable angina (UA) The manifestations of the ACS largely depend upon the disruption of the vulnerable plaque and the presence of progressive atherosclerosis in the coronary arteries. The pathophysiology of these syndromes is different but mainly hovers around the concept of the vulnerable plaque.

The risk of future cardiac events as well as disease progression would depend upon the assessment of the atherosclerotic burden in the coronary arteries as well as the vulnerable plaque assessment.

Coronary angiography still remains the "gold standard for assessment of the plaque burden." Although various biomarkers can indicate and be used to risk stratify the patients with ACS, the correlation between coronary angiographic profile and the clinical presentation of the ACS would serve as the most reliable indicator for such risk stratification

For example, a patient presents with NSTEMI represents a manifestation of the pathology of plaque disruption. If this patient were to be managed conservatively without a coronary angiographic profile, as is being done in many centers in India, then serious progression to STEMI may be missed and also this would lead to development of left ventricular (LV) dysfunction if the myocardium at risk has not been noted.

Thus, the clinical profile would necessitate institution of immediate angiography in the setting of ACS to accurately estimate the risk. Merely basing this on older risk assessment data with biomarkers, etc. is insufficient. A lot of risk scores have been developed like the TIMI risk score, PAMI risk score, TIMI risk index, GRACE risk model, etc.[3–5]

In fact, currently, in addition to coronary angiography, more sophisticated tools like intravascular ultrasound (IVUS) and optical coherence tomography (OCT) are being routinely employed to assess the vulnerable plaque, its composition, and risk of degeneration. However, before resorting to such expensive modalities, simple coronary angiographic profiling would give sufficient information, provided it is correlated systematically with clinical profiles like coronary risk factors, presentation, location of infarction, etc.

This would be the basis on which further sophisticated diagnostic and interventional modalities could be planned.

In this issue of the journal, the authors have attempted to correlate the clinical profile and angiographic severity of coronary artery disease in STEMI and NSTEMI ACS patients with the single purpose of establishing the basic atherosclerotic burden and vulnerable plaque as well as estimating the myocardial jeopardy in these patients.

Even though SYNTAX score has been evolved and used very successfully in risk stratification, the basic information has to be provided as to the presentation of the ACS.

This has been elegantly performed in this cohort of 209 patients coming with ACS to a tertiary care hospital. The study thus provides information about the common presentation of ACS and also their clinical risk profile.

This study had a predominant male population of 82.3%, and most of the patients had adequate LV function (only two patients had severe LV dysfunction). Even though diabetics formed the majority of patients, the incidence of dyslipidemia was considerably less (27 patients out of 209).

Address for correspondence
Dr. Jayaraman Balachander, MD, Department of Cardiology and Medical Supdt (Retd), Jawaharlal Institute of Post-Graduate Medical Education and Research, Puducherry 605006, India (e-mail: balachanderjayaraman @gmail.com).

The majority of the patients presented with anterior wall MI (AWMI). The data had a non-normal distribution, and therefore a nonparametric test (Kruskal–Wallis) has been applied to the data.

The female part of the study has been done, but since this comprised only a small portion, nothing much can be derived from this.

The surprising finding is the low figures of dyslipidemic patients in this study. This is corroborative with the fact that there are large regional variations in the patient profiles of ACS in India.

In a study from Kerala where dyslipidemia is universal, 48.6% of patients presenting with ACS only had dyslipidemia, and it was 38.46 in the female patients.[6] One of the largest studies in India, the Kerala ACS registry also did not dwell on any relation between dyslipidemia and ACS.[7]

A Karnataka study, wherein out of 651 patients with ACS, majority of whom who belonged to the lower income group by the Kuppuswamy classification, dyslipidemia was seen in 34.6% of the patients without any significant difference between STEMI and NSTE-ACS groups.[8]

Of course, this is consistent with the fact that all patients with dyslipidemia need not develop ACS and reemphasizes the importance of obtaining angiographic profile of those presenting with ACS.

In studies from PGIMER Chandigarh,[9] the predominant presenting feature of the ACS was STEMI, as seen from this study also. Among patients with STEMI, AWMI was more common. There are views that NSTE-ACS is more common than STEMI, but in our country, perhaps these patients of NSTE-ACS are not referred to tertiary care centers and are managed with the conservative approach.

The SYNTAX score 1 is the gold standard for the assessment of coronary angiographic profile. The observation that SYNTAX score 1 increased with lateral wall infarction, increased duration of alcohol abuse, systemic hypertension, and also with presentation of Killip class in acute MI lends credence to the importance of the angiographic profile of severity in patients with ACS.

Most angiographic series in ACS commonly report single-vessel disease of the left anterior descending (LAD) artery in addition with increasing SYNTAX scores of the diagonal branch of the LAD. Similarly, the involvement of the right coronary artery or the left circumflex could be seen in inferior wall MI. These are all found characteristically in the STEMI patients.

The NSTE-ACS patients would be expected to have double- or triple-vessel disease, especially in diabetics.

Clinical and angiographic correlation is must for optimal patient care in ACS; also, duration of the symptoms and hemodynamic stability of the patient needs proper assessment. In clinical practice, incidence of LV dysfunction is higher, especially in patients with AWMI, as presented in this study

Conflict of Interest
None declared.

References

1 Gupta R, Mohan I, Narula J. Trends in coronary heart disease epidemiology in India. Ann Glob Health 2016;82(02):307–315

2 GBD 2017 Causes of Death Collaborators. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980-2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet 2018;392 (10159):1736–1788

3 Addala S, Grines CL, Dixon SR, et al. Predicting mortality in patients with ST-elevation myocardial infarction treated with primary percutaneous coronary intervention (PAMI risk score). Am J Cardiol 2004;93(05):629–632

4 Morrow DA, Antman EM, Charlesworth A, et al. TIMI risk score for ST-elevation myocardial infarction: A convenient, bedside, clinical score for risk assessment at presentation: An intravenous nPA for treatment of infarcting myocardium early II trial substudy. Circulation 2000;102(17):2031–2037

5 Morrow DA, Antman EM, Giugliano RP, et al. A simple risk index for rapid initial triage of patients with ST-elevation myocardial infarction: an InTIME II substudy. Lancet 2001;358(9293): 1571–1575

6 Alappatt NJ, SaiSailesh K, Mukkadan JK. Clinical profile of acute coronary syndrome in young adults. Journal of Medical Sciences and Health 2016;02(01):5–10

7 Mohanan PP, Mathew R, Harikrishnan S, et al; Kerala ACS Registry Investigators. Presentation, management, and outcomes of 25 748 acute coronary syndrome admissions in Kerala, India: results from the Kerala ACS Registry. Eur Heart J 2013;34(02):121–129

8 Sidhu NS, Rangaiah SKK, Ramesh D, Veerappa K, Manjunath CN. Clinical characteristics, management strategies, and in-hospital outcomes of acute coronary syndrome in a low socioeconomic status cohort: an observational study from urban India. Clin Med Insights Cardiol 2020 (e-pub ahead of print). Doi: 10.1177% 2F1179546820918897

9 Sharma YP, Santosh Vemuri K, Bootla D, et al. Epidemiological profile, management and outcomes of patients with acute coronary syndrome: Single centre experience from a tertiary care hospital in North India. Indian Heart J 2021;73(02):174–179