EDITORIAL COMMENT

The Challenge of Improving Outcomes After a Myocardial Infarction in Sub-Saharan Africa

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There is a growing burden of coronary artery disease (CAD) in sub-Saharan Africa (SSA) which is bound to rise given the high prevalence and poor control of cardiovascular risk factors such as hypertension.[1,2] Herman and colleagues, in the article, "30-day and 1-year outcomes of myocardial infarction in Cote d'Ivoire" discuss outcomes following admission to critical care among patients with acute myocardial infarction (MI) presenting to a well-equipped tertiary center in Abidjan, Cote d'Ivoire.[3] The study is an important addition to the literature in a region that is greatly underrepresented in studies of CAD and helps to highlight the unique challenges faced in managing MI in this population setup.

The investigators enrolled patients over a 2-year period with acute MI admitted to their critical care unit, and followed them up for mortality and major adverse clinical events, and their determinants through the creation of a registry. It is impressive that the authors were able to obtain follow-up data on more than 97% of the patients through the registry.

The results of the study are consistent with previous work from SSA, characterized by low age, marked delay in presentation, poor use of reperfusion therapy, and high morbidity and mortality.[4,5] The investigators found an in-hospital and 1-year mortality of 9.9% and 21.7%, with major adverse clinical events of 27.3% at 1 year.

Even in this well-resourced urban center, where more than 80% of the patients underwent angiography with more than one-half receiving percutaneous coronary intervention or coronary artery bypass graft surgery, early, in-hospital and late mortality was significantly worse than in Western cohorts.[6,7]

Across the world, outcomes for acute MI depend on early detection, early diagnosis, immediate reperfusion and revascularization, access to secondary preventive medical therapy, and rehabilitation. Other predictors of poor outcome include concomitant renal dysfunction, heart failure, ventricular arrhythmia, and anterior wall infarction, older age and female gender.[6-8]

Consistent with previous studies in SSA,[4] the findings of this study speak to a relationship between delays in treatment, occasioned by delays in presentation and diagnosis, and both acute and long-term outcomes. This is almost universally associated with inadequate infrastructure and resource constraints. The authors site a lack of interhospital networks, unsafe transportation, and unavailability of protocols for the management of coronary emergencies. This is a pattern that repeats itself across most of SSA and in many low- and middle-income countries (LMICs). The median delay from symptoms to critical care admission was 24 hours in this cohort. In this study, acute reperfusion therapy was significantly associated with a better prognosis at 30 days and 1-year follow-up. Since these systemic issues are unlikely to change in the near future, innovative initiatives are therefore necessary to cope with these constraints.

The pharmaco-invasive strategy for reperfusion is a relevant approach for many LMICs but it must be offered in a timely fashion.[9] Studies in the Western world have indicated comparable benefits to primary

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percutaneous coronary intervention. Several initiatives are currently underway in Africa to integrate the pharmaco-invasive approach into national practice. Many of these have been inspired by the Pan-African Society of Cardiology's (PASCAR) AfricaSTEMI movement.[10] The annual AfricaSTEMI meeting, launched in 2016, has created a conversation among representatives of more than 25 African countries on acute and long-term acute coronary syndrome care strategies. The movement addresses systemic issues like educating the public and primary health care providers, increasing availability of electrocardiograms and providing training in electrocardiogram interpretation, provision of generic thrombolytics and developing Hub and Spoke like networks of care in collaboration with enhanced ambulance systems. This has catalyzed the emergence of national and regional initiatives for acute coronary syndrome care in Africa.

Some of these have been supported by collaborations with international movements including stent-save-a-life who have supported the development of key infrastructure in LMICs. Prior to the civil war in Sudan, the Sudanese Society of Cardiology had convinced their government to cover the cost of pharmaco-invasive therapies for all patients with acute coronary syndrome. Engagements of this nature, led by clinicians, however remain the exception rather than the rule and usually receive little or only transient support from policymakers and governments. This is a problem that needs solutions given the rising burden of CAD and MI in SSA.[1]

Accurate estimates of acute coronary syndrome incidence are challenging in SSA because of the lack of diagnostic capacity.

The pandemic has created a dual public health need. The first of these is a focus on primary prevention. SSA simply does not have the resources to deal with a full-blown epidemic of CAD. This makes primary prevention a priority. It is well known that most of the risk comes from a few known risk factors, which are however, poorly controlled.[11,12]

The second need is an emergency response system for acute coronary syndrome presentations, through the development of infrastructure to support emergency care. In this regard, guidelines for acute care that have been implemented for resource-rich countries are unfeasible and bespoke or home grown solutions to meet the needs of SSA are needed. A team from PASCAR contributed to a multicountry collaboration of investigators to create and publish "a consensus document that extracts transferable elements from Western guidelines and couples them with local realities gathered from expert experience".[9]

Although many of the important clinical determinants of outcome in this population were studied, several nonclinical factors that are known to influence health outcomes were not evaluated in this study. Among these are socioeconomic factors like income, education and transportation mode, health insurance or funding status, and health-seeking and health-receiving factors including access to and adherence to lifestyle advice, to drugs and to cardiac rehabilitation. Future studies which standardize data collection across multiple sites in Africa and which incorporate these variables alongside traditional clinical variables may help crystallize the picture and provide targets for future focus by policymakers and governments.

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