Management of STEMI in the Middle East: Current Status, Strategies for Improvement

Written by **Maria Vinall**

The prevalence of ischemic heart disease is increasing among the 340 million people who live in the Arab world. Thus, a program that improves the management of ST-elevation myocardial infarction (STEMI) and access to coronary revascularization therapies is needed. Habib Gamra, MD, Fattouma Bourguiba University Hospital, Monastir, Tunisia, discussed ways to improve the management of STEMI in the Arab world.

The ACCESS Registry is a prospective, observational, multinational registry of patients from 134 sites in 19 countries in Latin America, the Middle East, and Africa who were hospitalized for an acute coronary syndrome (ACS) between January 2007 and January 2008. Of the 11,731 patients with confirmed ACS, 46% were diagnosed with STEMI and 54% with non-ST Elevation ACS (non-ST Elevation Myocardial Infarction (NSTEMI) or unstable angina). Diabetes, hypertension, abdominal obesity, and smoking were identified as significant risk factors for ACS.

While hospitalized, the majority of patients received aspirin (93%), lipid-lowering medication (94%), β-blocker (78%) and angiotensin-converting enzyme inhibitor (68%). Death at 12 months was higher in patients with STEMI (8.4%) as compared with NSTEMI (6.3%, $p<0.0001$). Although the use of evidence-based, pharmacologic therapies occurred in the majority of patients with ACS, the majority of patients with STEMI who were eligible for reperfusion therapy did not receive either fibrinolysis or primary percutaneous coronary intervention (PCI). These data suggests further work is necessary in order to increase access of patients in developing countries to reperfusion therapies and other therapies which reduce the risk of long-term ischemic events in patients with ACS [ACCESS Investigators. *Am Heart J* 2011].

While percutaneous revascularization has been shown to be preferable to thrombolysis for the management of patients with STEMI, thrombolysis is more commonly used in the Middle East. Of the 1470 patients with STEMI followed in the Monastir for Acute MI [MIRAMI] registry, 23.6% received primary angioplasty (PAMI) and 34.5% received streptokinase. Thrombolytic success (defined as chest pain relief <5 using a scale of 1 to 10 and ST-elevation resolution >50% from baseline) was achieved in 70% of the patients who received treatment within 3 hours from chest pain onset. Predictors of success were short time to treatment (<3 years), smoking, and inferior STEMI while severe heart failure was a predictor of thrombolytic failure.

The Gulf Registry of Acute Coronary Events (Gulf Race) followed 8169 consecutive patients (74% men) with ACS patients from six Middle Eastern countries. In this registry, women were more likely than men to present with unstable angina and more often had atypical presentations of STEMI. In contrast, men presented with STEMI (45%) more frequently than women (22%). Compared with men, women were significantly less likely to be treated with β-blockers and antiplatelet therapy. Among patients with STEMI eligible for reperfusion therapy, 83% received thrombolytic therapy. PCI was performed in 9% of eligible patients; another 8% were eligible but did not undergo reperfusion therapy. The percentage of patients who were eligible for reperfusion but were not treated was higher in women as compared with men (15% vs 8%; p=0.001). Women had higher in-hospital mortality and had poorer outcomes than men [El-Menyar A et al. *Am J Cardiol* 2009]. The finding of inadequate use of reperfusion therapy among patients with STEMI in Arab countries has also been documented in other studies [Moustaghfir A et al. *Arch Cardiovasc Dis* 2012]. To better achieve guideline-based treatment, the Middle East needs more catheterization laboratories with adequate geographic distribution capable

of running a primary PCI program 24 hours a day [Knot J et al. *EuroIntervention* 2009]. There is also a critical need for education of the general population regarding ACS and more training for healthcare providers.

Prof. Gamra's concluded with the observation that in patients with STEMI, thrombolysis is effective if initiated soon after the onset of symptoms but primary PCI is the preferred method of revascularization.
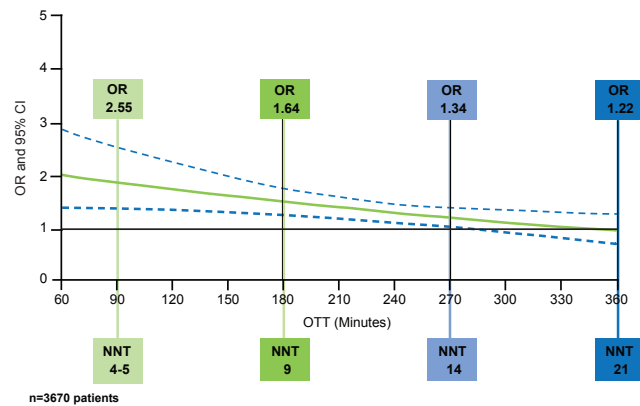
New Thinking for the Management of Acute Interventions

Written by Maria Vinall

Horst Sievert, MD, CardioVascular Center Frankfurt, Frankfurt, Germany, discussed new data which may change the management of patients with acute stroke. He noted that there is often a long time interval between the onset of stroke and treatment. In addition, current transfer systems for getting patients to hospital or catheterization laboratories in order to undergo treatment are poorly developed. Finally, current therapies are limited.

The amount time in which the brain is without blood flow impacts the severity of the stroke and potential for recovery. There is often a considerable delay from the time in which patients first develop symptoms to the time in which they seek treatment. Efforts must be made to educate patients about the early signs of transient ischemic attack (TIA)/stroke and the need to quickly seek medical care when these symptoms occur. The time to treatment may also be improved by using ambulances specifically designed for transporting stroke patients. It may also be possible to reduce the amount of time needed to make the diagnosis of a stroke by utilizing mobile computed tomography (CT) scanners or bypassing the Emergency Department and taking patients directly to imaging. Providers could then take a history can be taken, perform lab tests, and ready the patient for thrombolysis while the patient is preparing to undergo imaging.

Expediting the treatment of patients with thrombolysis is important since data from a pooled analysis of early administration of recombinant tissue plasminogen activator (rtPA) after ischemic stroke showed benefit out to 4.5 hours after stroke onset. After 4.5 hours, the risk of thrombolysis may outweigh its potential benefits (Figure 1) [Lees KR et al. *Lancet* 2010].

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Figure 1. Pooled Analysis rtPA for Acute Ischemic Stroke: Favorable Outcome (mRS 0-1) Versus Time

Reproduced from Lees KR et al. Time to treatment with intravenous alteplase and outcome in stroke: an updated pooled analysis of ECASS, ATLANTIS, NINDS, and EPITHET trials. *Lancet* 2010;375(9727):1695-1703. With permission from Elsevier.

Thrombolysis improves outcomes in patients with acute ischemic stroke; however, the success of thrombolysis for the recanalization of large clots is poor (~10% success) and reocclusion occurs in ~20% of patients who initially have successful reperfusion. The use of angiography allows for better localization of the occlusion and allows for direct administration of thrombolytics to thrombus. In addition, mechanical thrombectomy devices can be used to obtain immediate reperfusion.

Although thrombolysis is still the gold standard therapy for acute stroke, more centers are developing clinical pathways based on severity, duration of symptoms, and the use of catheter intervention. Data from the PROACT-II study [Furlan A et al. *JAMA* 1999], IMS II trial [IMS Trial Investigators. *Stroke* 2007], and RECANLISE registry [Sen S et al. *Neurocrit Care* 2009], support the use of a catheter invention approach; however, recent data show no benefit from mechanical lysis compared with IV tPA (IMS III [Broderick JP et al. *N Engl J Med* 2013], SYNTHESIS [Ciccone A et al. *N Engl J Med* 2013], and MR Rescue [Kidwell CS et al. *N Engl J Med* 2013]). As a result, the optimal treatment for patients with ischemic stroke remains undefined.

Prof. Sievert proposed an algorithm to guide treatment selection based on time since symptom onset (Table 1).

Table 1. Treatment Algorithm

Time of Symptom Onset	Treatment
<4.5 hours	
NIHSS score <10	IV tPA
NIHSS score >10	IA lysis/mechanical
4.5 to 6 hours	IA lysis /mechanical
>6 hours	IA lysis guided by perfusion imaging

IA=intra-arterial; IV=intravenous; NIHSS=National Institutes of Health Stroke Scale; tPA=tissue plasminogen activator.