



CLINICAL TRIAL HIGHLIGHTS

# Preliminary Results of SAUDICAT Provides IVUS Characterization of CAD

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The incidence of coronary artery disease (CAD) has reached epidemic levels in Saudi Arabia. [Al-Nozha MM et al. *Saudi Med J* 2004]. In addition, Saudi Arabia has the highest prevalence of diabetes (DM) in the Middle East [Al-Nozha MM et al. *Saudi Med J* 2004]. As a result, the Saudi Coronary Athero-Thrombotic disease study [SAUDICAT] sought to use intravascular ultrasound to define the spectrum of coronary atherosclerotic disease in Saudi nationals with acute coronary syndromes (ACS) [Lawand S et al. *J Saudi Heart Assoc* 2012]. Samih Lawand, MD, Prince Salman Heart Center, Riyadh, Saudi Arabia, presented the preliminary results of the first 59 consecutive patients enrolled in this study.

The patients were mostly men (78%), 46% currently smoked and two thirds had DM. The presenting diagnosis was ST-segment elevation myocardial infarction (STEMI) in 25% of patients, non-STEMI (NSTEMI) in 42%, and unstable angina in 32% of patients.

The rate of NSTEMI was significantly higher in the 39 patients with DM (60%) compared with those without DM (40%;  $p=0.009$ ). The incidence of hypertension (75% vs 26%;  $p=0.053$ ) and dyslipidemia (70% vs 30%;  $p=0.59$ ) was also more prevalent in patients with NSTEMI. STEMI was more common in patients without DM.

Differences in the coronary anatomy and structure were found between patients with DM, as compared with patients without DM, including significantly smaller vessel diameters, smaller lumen diameters, smaller vessel areas, and smaller plaque areas among patients with DM (Table 1).

Table 1. IVUS Characterization of Coronary Vessels in Patients With and Without Diabetes

Total (n=59; 435 Obs)	Nondiabetic (n=17; 110 Obs)	Diabetic (n=42; 325 Obs)	p Value
Vessel area mean	12.87867717	11.3618954	0.0088
Average vessel diameter	3.988856451	3.744483503	0.0080
Plaque area mean	6.973303866	6.09470437	0.0200
Lesion area mean	5.905379927	5.267276642	0.0632
Average percent volume obstruction	0.5277 (0.0787± SD)	0.5363 (0.0782± SD)	0.7795

Patients with DM who presented with STEMI were more likely to have significantly smaller vessel diameters, luminal diameters, and plaque areas. In contrast, patients with DM who presented with NSTEMI had significantly larger plaque areas ( $p=0.0003$ ) and plaque burden ( $p=0.0033$ ), and a trend for a larger remodeling index ( $p=0.3345$ ) that was not significantly different compared without DM. In the setting of unstable angina, no significant differences were seen between the patients with and without DM.

Patients with diabetes presenting with STEMI or NSTEMI were more likely to have a greater plaque burden and larger plaque area, which Prof. Lawand hypothesized may be due to advanced atherosclerosis. Although patients with diabetes had smaller coronary vessels overall, he noted that the size of the plaque area and percent volume obstruction was similar to patients without diabetes.

Prof. Lawand concluded that this small, retrospective analysis of intravascular ultrasound (IVUS) data highlights the need for improvements in the use of IVUS and provides a framework to better understand the characteristics of coronary atherosclerosis in a Middle Eastern population.

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