Clinical Significance of ST Segment Elevation in Lead aVR as Predictor of Left Main Coronary Occlusion in Acute Coronary Syndrome

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Introduction --- The purpose of this study was to assess the value of the 12- Lead ECG in identifying left main coronary artery (LMCA) lesion in patients with acute coronary syndrome. It was also intended to determine if ST segment elevation in lead aVR was predictive for left main coronary artery lesion in acute coronary syndrome and if ST segment depression in the precordial lateral leads (V4-6) was predictive of LMCA lesion in acute coronary syndrome.

Study Design --- Prospective, cross-sectional study.

Duration of the study --- January 2007 up to December 2008.

Patients and Methods --- A total of 214 patients from the Philippine Heart Center were screened and included in the study. Patients with a first AMI presenting within 24 hours after onset of symptoms were selected of anginal pain and/or elevation of molecular markers (Troponin T, Troponin I, CPK-MB). Medical histories were reviewed. The initial 12-lead ECG obtained at the emergency room, or, occasionally, another tracing from the first hours showing more pronounced changes, was examined and screened for the presence of ST-segment elevation in the lead aVR and/or ST-segment depression in the leads V4-V6. Patients who underwent coronary angiogram within the period of their admission or before discharged were included in the study.

Results: Most of the subjects were males (77.1%). The mean age was 60.27 years with a standard deviation of 11.21. A total of 161 subjects (representing 75.2 %) were hypertensive and a total of 88 subjects (41.1 %) were diabetic. There were 102 (47.7%) patients who smoked or previously smoked and 57 (26.6%) were alcoholic. Eighty-one (37.9%) patients came with STEMI while NSTEMI and UA came with 73 (34.1%) and 59 (27.6%) subjects respectively. Patients with a positive aVR in their 12-L ECG constitute 84 subjects (39.3%), while 61 subjects (28.5%) came with V4-V6 ST-segment depression. Sixty-seven patients (31.3%) had a positive left-main involvement in their coronary angiogram. The sensitivity of lead aVR was noted at 91.0 % and the specificity at 84.4%, while the sensitivity of V4-6 was noted at 43.3% and the specificity at 78.2% respectively. With regard to determining the best variable combination in predicting left main involvement, the combination of positive for both aVR $\pm$ V4-6 $\pm$ positive for aVR and negative for V4-6 gave the best parameter. The sensitivity was 91% and specificity was 84.4%.

Conclusion --- This study have shown that the presence of concomitant ST segment depression in leads V4-6 in ST segment elevation in lead aVR can be used as an added criterion in the detection of significant LMCA lesion in a patient with acute coronary syndrome.
Phil Heart Center J 2012; 16:77.