ST-SEGMENT DEPRESSION IN LEAD AVR STRONGLY PREDICTS ADVERSE OUTCOMES IN PATIENTS WITH ANTEROLATERAL ST-SEGMENT ELEVATION ACUTE MYOCARDIAL INFARCTION

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Background: During anterolateral ST-segment elevation acute myocardial infarction (STEMI), ST-segment depression in lead aVR might result when the force of the injury current produced by ischemia in the apical region exceeds that produced by ischemia in basal septum, suggesting a larger area at risk. We examined the clinical significance of ST-segment depression in lead aVR on admission ECG in patients with reperfused anterolateral STEMI.

Methods: We studied 414 patients with a first anterolateral STEMI who had TIMI 2/3 flow after fibrinolysis or primary percutaneous coronary intervention within 6 h after symptom onset. Patients were divided according to ST-segment deviation in lead aVR on admission ECG: group A, 103 patients with ST-segment elevation of ≥ 0.5 mm; group B, 170 patients with no ST-segment deviation; and group C, 141 patients with ST-segment depression of ≥ 0.5 mm. Impaired myocardial reperfusion was defined as myocardial blush grade 0 or 1 on the final angiogram.

Results: There were no differences in age, sex, coronary risk factors, time from symptom onset to admission, reperfusion therapy, or final TIMI flow grade among the 3 groups. In groups A, B, and C, the rate of Killip class > 2 was 7%, 7%, and 16% (p=0.013); the sum of ST-segment elevation in leads I, aVL, and V1-6 on admission ECG was 18±11, 19±10, and 27±12 mm (p<0.001); initial TIMI 0 or 1 flow rate was 54%, 61%, and 72% (p=0.012); peak creatine kinase level was 2842±1969, 3665±2202, and 5444±2879 mU/ml (p<0.001); and the frequencies of impaired myocardial reperfusion was 15%, 19%, and 53% (p<0.001); the combined outcome of death, reinfarction, shock, or congestive heart failure at 30 days was 15%, 19%, and 53% (p<0.001), respectively. Multivariate analysis showed that ST-segment depression in lead aVR was an independent predictor of combined outcome at 30 days (odds ratio 3.81, 95% CI 1.83-7.92, p<0.001); but other ECG findings were not.

Conclusions: In patients with anterolateral STEMI, ST-segment depression in lead aVR on admission ECG is associated with impaired myocardial reperfusion, a larger infarct size and 30-day adverse outcomes. Assessment of ST-segment deviation in lead aVR is useful for acute risk stratification.