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Association between Type of ST Segment Response, Characteristics of Coronary Disease and Location of Wall Motion Abnormalities Induced by Acute Myocardial Ischemia

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Background:

Detection of wall motion abnormalities (WMA) by Echo depends on the extent of myocardial damage which is related to the intensity and duration of ischemia involving the myocardial territory at risk. Little is known about the relation between the pattern of ST segment deviation on ECG during the first hours after the onset of ACS, coronary anatomy and subsequent detectable WMA on Echo.

Aim:

To determine if there is a relation between type of ST response and the WMA following this type of acute myocardial ischemia.

Methods:

Four groups of 25 ACS patients were studied: STEMI (ST elevation MI); NSTEMI (non-ST elevation MI); T-STEMI (transient ST elevation: ST elevation fully resolving without reperfusion therapy); UAP (anginal pain and electrocardiographic evidence of ischemia but without biomarker elevation). All patients were studied by Echocardiography within 24 hours of admission and underwent coronary angiography. WMA and location/proximity of significant coronary narrowings (70%) were noted.

Results:

Ages and proportion of males in the groups were similar by definition (57 10 years, 84% male). In STEMI and NSTEMI all patients had significant coronary lesions whereas 12% of TSTEMI and UAP had none. Most STEMI patients (62%) had LAD lesions, in the NSTEMI and UAP patients the lesions were evenly distributed between LAD, CX and RCA, while most TSTEMI patients had RCA disease (72%). WMA were most frequently detected in the territory of the LAD, Cx, and RCA in STEMI NSTEMI, TSTEMI respectively, whereas absence of WMA was the most common finding in UAP (Figure).

Conclusions:

Differences in location of WMA detected by Echocardiography were noted according to type of ST segment deviation during the acute phase of the ischemia. Transient ST elevation, when noted, is most frequently associated with RCA disease.