Culprit Only versus Complete Coronary Revascularization during Primary PCI

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Background: Current guidelines for management of patients with ST elevation myocardial infarction (STEMI) recommend treating only the culprit vessel in multivessel disease and that other vessels be addressed at a later procedure. Acute multivessel PCI (MVPCI) is recommended during the index procedure only for patients with hemodynamic compromise.

Objectives: The purpose of this study was to examine differences in in-hospital clinical outcomes as well as short term and 1 year mortality for STEMI patients with multivessel disease as a function of whether they underwent culprit vessel or MVPCI.

Methods: STEMI patients with multivessel disease undergoing primary PCIs between January 2001, and September 2010, were divided into those who underwent culprit vessel PCI (CVPCI) alone and those who underwent MVPCI during the index procedure. In-hospital adverse outcomes and mortality rates were compared.

Results: A total of 453 patients had multivessel disease. In 318 (70.2%) of them MVPCI was performed during the index procedure, in 135 (29.8%) patients CVPCI only was done, the rest of the revascularization was completed in the same hospitalization in 29 patients,and 1 to 3 months after in 106 patients.

MVPCI during the index procedure was associated with a shorter hospitalization (4.4 ± 1.27 vs 7.6 ± 2.3 days, P = 0.01), reduced incidence of in-hospital major adverse cardiac events (recurrent ischemia, reinfarction, acute heart failure and mortality (16.1vs 35.5%, P = 0.01). There was a significantly lower rate of recurrent ischemic episodes (7.2% vs 25.9%, P = 0.02), myocardial reinfarction (3.1% vs 9.6%, P = 0.01), and reintervention (9.4% vs 29.9%, P = 0.001). Transient renal dysfunction was more common in MVPCI (8.4% vs 4% P = 0.01).

In-hospital and one year mortality rates (4.1% vs 4.4% p=0.9, 6.9% vs 7.4% , p=0.5) were similar in both groups.

Conclusion: MVPCI in STEMI is feasible, safe and can result in improved clinical outcomes in select cases.