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Prognostic Value of ^{18}F-FDG Positron Emission Tomography in Patients with Coronary Artery Disease and Left Ventricular Dysfunction

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Purpose: To evaluate the prognostic value of ^{18}F-FDG positron emission tomography (PET) in patients (pts) with coronary artery disease (CAD) and left ventricular dysfunction and to establish whether myocardial revascularization (RVS) will decrease the cardiac events in pts with perfusion-metabolism mismatch. **Method:** 107 consecutive pts (mean age 57±9 yr) with CAD and left ejection fraction (LVEF=38±9%) who underwent ^{18}F-FDG PET imaging and ^{99m}Tc-MIBI SPECT imaging were followed up for 24±5 mons. Myocardial segments were classified as perfusion-metabolism mismatch (MM) and Match (M). LVEF and left ventricular end diastolic diameter (LVEDD) were measured with echocardiography (Echo). **Results:** Fifty-nine pts underwent RVS and 48 pts underwent medical therapy. Three (POS1) and 6 months (POS2) after RVS, forty-six pts and 23 pts underwent Echo, respectively. Cardiac death, myocardial infarction (MI), unstable angina pectoris and late RVS (>3 mon) were considered cardiac events. Among 64 patients with 2 or more MM segments, 35 pts received RVS (MM1) and 29 pts received medical therapy (MM2). Among 43 pts with less than 2 MM segments, 24 pts underwent RVS (M1) and 19 pts underwent medical therapy (M2). After RVS, LVEF in MM1 was increased from 38±8% to 48±10% ($p<0.0001$) in POS1 and to 52±10% ($P<0.001$) in POS2. LVEDD in MM1 was decreased form 62±8 mm to 53±7 mm ($P<0.0001$) in POS1 and to 53±8 mm ($P<0.01$) in POS2. However, LVEF and LVEDD were unchanged in M1 after RVS ($P>0.05$). The cardiac event rate of 51.7% (15/29) in MM2 was significantly higher than that of 2.9% (1/35) in MM1 ($x^2=20.1$, $P<0.0001$), higher that of 16.7 % (3/24) in M1 ($x^2=7.02$, $P=0.002$) and that of 21.1% in M2 ($x^2=4.5$, $P=0.03$). **Conclusion:** The results suggest that the presence of MM in pts with CAD and left ventricular dysfunction is associated with poor prognosis with medical therapy, and these pts may need aggressive RVS to prevent a future cardiac event and to improve left ventricular function.

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A Comparative Study of Primary Coronary Stenting with Intravenous Thrombolysis for Acute Myocardial Infarction Using ^{99m}Tc-MIBI SPECT Imaging

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Objective: To evaluate and compare the therapeutic effectiveness of primary coronary stenting with that of intravenous thrombolysis for acute myocardial infarction (AMI) using ^{99m}Tc-MIBI myocardial SPECT imaging. **Methods:** A total of 42 patients with AMI was undergoing primary coronary stenting (stenting group, 23 patients) or intravenous thrombolysis therapy (thrombolysis groups 19 patients). ^{99m}Tc-MIBI myocardium SPECT imaging was performed before and 1 week after stenting or thrombolysis therapy. The left ventricular myocardium of each patient was divided into 20 segments. The semiquantitative score of myocardial ^{99m}Tc-MIBI uptake was expressed with a five-point scoring system. The scores of scanning before stenting or intravenous thrombolysis was SBS. The scores of scarring after stenting or intravenous fhrombolysis was SAS. Deducting SAS from SBS was SDS. **Results**: Make a comparison between the SAS. stenting group and fhrombolysis group: SBS was 41.3±9.8 and 39.4±7.9 ($t=1.2$, $P>0.05$); SAS was 17.8±6.4 and 27.3±6.7 ($t=5.8$, $P<0.01$); SDS was 24,5±4.2 and 12.2±23 ($t=7.3$, $P< 0.01$). In 149 defect segments before stenting, 106 segments (54.9%) restored to normal after stenting. In 149 defect segment before intravenous thrombolysis, 61 segments (40.9%) restored to normal after thrombolysis therapy. The comparison between stenting group and thrombolysis group in improved rate of the myocardial perfusions defect scores there was a significant difference ($P<0.01$). **Conclusions:** ^{99m}Tc-MIBI myocardial SPECT imaging has been proved to be an objective parameter for evaluating the therapeutic effectiveness of the stenting and intravenous thrombolysis in treatment of AMI. At the same time;, the results indicate that primary coronary stenting seems to be more effective than intravenous thrombolysis.