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Journal of Nuclear Cardiology

Volume 14, Issue 4 SPEC. ISS., July 2007, Pages 529-536

Assessment of transient left ventricular dilation ratio via 2-day dipyridamole Tc-99m sestamibi nongated myocardial perfusion imaging

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Abstract

Background: The definition of an abnormal transient ischemic dilation (TID) ratio may be different according to stress type, type of isotope, and imaging protocols. The aim of this study was to derive the normal threshold and assessment of the TID ratio via 2-day dipyridamole stress/rest technetium 99m sestamibi myocardial perfusion single photon emission computed tomography (MPS). **Methods and Results:** We performed 2-day dipyridamole stress/rest Tc-99m sestamibi MPS in 665 patients. The TID ratio was calculated automatically with the Emory Cardiac Toolbox. The upper limit of normal (1.19) for the TID ratio was derived from 131 patients with a low (<5%) likelihood of coronary artery disease as mean + 2 SDs. Patients with complete or partial reversible defects or multivessel-type or left anterior descending artery (LAD) territory perfusion abnormalities had higher TID ratios than the other patients. These patients had a higher frequency of an abnormal TID ratio (>1.19) as well. Binary logistic regression analysis showed that ischemia and LAD territory perfusion abnormality were independent predictors of an abnormal TID ratio. **Conclusion:** The threshold for an abnormal TID ratio via 2-day post-dipyridamole stress/rest Tc-99m sestamibi MPS was greater than 1.19. By use of this protocol, TID is not uncommon and it is related to a greater amount of ischemic burden as well as multivessel-type or LAD territory perfusion abnormality. © 2007 American Society of Nuclear Cardiology.

Author keywords

dipyridamole; ischemia; myocardial perfusion single photon emission computed tomography; Transient ischemic dilation

Indexed Keywords

EMTREE drug terms: aminophylline; dipyridamole; methoxy isobutyl isonitrile technetium tc 99m

EMTREE medical terms: adult; aged; article; automation; clinical protocol; clinical trial; computer program; coronary artery blood flow; coronary artery disease; diagnostic accuracy; diagnostic value; female; heart left ventricle; heart left ventricle hypertrophy; heart muscle ischemia; heart muscle perfusion; heart scintiscanning; human; image analysis; left anterior descending coronary artery; logistic regression analysis; major clinical study; male; pharmacologic stress testing; prediction; priority journal; quantitative analysis; risk assessment; single photon emission computer tomography

MeSH: Aged; Coronary Arteriosclerosis; Dipyridamole; Female; Heart; Humans; Male; Middle Aged; Myocardial Ischemia; Myocardium; Perfusion; Software; Technetium Tc 99m Sestamibi; Tomography, Emission-Computed, Single-Photon; Vasodilator Agents; Ventricular Dysfunction, Left

Medline is the source for the MeSH terms of this document.

Chemicals and CAS Registry Numbers: aminophylline, 317-34-0; dipyridamole, 58-32-2; methoxy isobutyl isonitrile technetium tc 99m, 109581-73-9; Dipyridamole, 58-32-2; Technetium Tc 99m Sestamibi, 109581-73-9; Vasodilator Agents

Device tradename: Dual-Head Variable-Angle E. CAM, Siemens, United States, Emory Cardiac Toolbox, Emory University, United States.

Manufacturers: Device manufacturer: Emory University, United States; Siemens, United States.

ISSN: 10713581 CODEN: JNCAE Source Type: Journal Original language: English

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