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The practical value of technetium-99m-MIBI SPET to differentiate between ischemic and non-ischemic heart failure presenting with exertional dyspnea

Osman Beton

Cumhuriyet University School of Medicine, Turkey

Objective: We aimed to differentiate ischemic heart failure (HF) from non-ischemic HF in patients presenting with non-acute onset exertional dyspnea using technetium-99m methoxyisobutylisonitrile gated single photon emission tomography (99mTc-MIBI gSPET) imaging.

Subjects & Methods: 179 consecutive patients with exertional dyspnea without concomitant chest pain referred to 99mTc-MIBI gSPET imaging were included in this study. All patients had a newly diagnosed HF with reduced ejection fraction (HFrEF). Imaging findings were compared between ischemic HF and non-ischemic HF groups.

Results: Of the 179 patients, 127 had ischemic HF and 52 had non-ischemic HF. There was no difference between ischemic and non-ischemic groups in terms of age, gender, body mass index, any smoking history, diabetes mellitus, history of hypertension and hyperlipidemia. Global dysfunction of left ventricle was more common in non-ischemic HF group than ischemic HF group (82.7% vs. 41.7% respectively, $P<0.001$). Presence of severe (3+/4+) ischemia and large perfusion defect were higher in ischemic HF group compared to non-ischemic HF group (45.7% vs. 15.4%, $P<0.001$ and 23.6% vs. 3.8%, $P=0.003$, respectively). Summed stress score (SSS), summed rest score and summed difference score were higher in ischemic HF group compared to non-ischemic HF group ($P<0.001$, $P<0.001$, and $P=0.021$, respectively). In multivariate analysis, absence of global dysfunction ($P<0.001$, OR=10.338, 95%CI: 3.937-27.405) and SSS ($P<0.001$, OR=1.208, 95%CI: 1.090-1.339) were the independent predictors of ischemic HF. Absence of global dysfunction had 58.3% sensitivity and 86.7% specificity for diagnosis of ischemic HF at gSPET imaging in patients presenting with newly diagnosed HF and exertional dyspnea without concomitant chest pain (AUC=0.705, 95%CI:0.632-0.771, $P<0.001$), whereas SSS>8 had 65.4% sensitivity and 75.0% specificity (AUC=0.732, 95%CI:0.661-0.795, $P<0.001$).

Conclusion: Absence of global dysfunction and SSS on SPET imaging were the independent predictors of ischemic etiology of HF presenting with dyspnea without concomitant chest pain. These findings had a low sensitivity, but acceptable specificity.

Biography

Osman Beton has completed his MD from Trakya University School of Medicine and Post-doctoral studies from Ankara University School of Medicine, Departement of Cardiology. He is the Director of Catheterization Laboratory and Co-director of Heart Failure Program in Cumhuriyet University School of Medicine, Heart Center, Department of Cardiology. He has published more than 20 papers in reputed journals.

obeton@cumhuriyet.edu.tr

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