

Myocardial Perfusion Scintigraphy in Hypertensive Patients: Is it a Reliable Tool for CAD Screening?

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Myocardial perfusion scintigraphy (MPS) is one of the most commonly used imaging studies to assess coronary flow status and to evaluate patients with respect to the probability of coronary artery disease [1,2]. However, some authors have raised concerns about the accuracy of MPS in patients with hypertension (HTN). For example, Fragasso et al showed a specificity and positive predictive value of 36% and 67% for MPS in patients with HTN and concluded that MPS traces perfusion abnormalities, not necessarily caused by epicardial CAD, possibly due to sequelae of microvascular disease [3,4]. These findings may lead to unnecessary cardiac catheterization [4].

It has been stated that several mechanisms in HTN might hamper coronary flow reserve and leading to angiographically negative but scintigraphically positive studies, meaning reduced specificity of MPS if coronary catheterization is considered as the gold standard. Among these probable mechanisms left ventricular (LV) hypertrophy and microvascular disease are the most important potential factors which are independent of the presence of significant CAD [4]. These are the same explanations for abnormalities of ST-T segment on resting ECG (electrocardiographic strain pattern or left ventricular hypertrophy), which often make the application of ECG stress test unreliable, making it necessary to bring into play imaging techniques, such as MPS. As HTN is one of the most common risk factors in patients with CAD and frequently seen in patients undergoing MPS for noninvasive assessment of CAD, it is critical to make sure that the accuracy of the technique is not affected by the presence of HTN.

A number of studies have been well designed for this purpose. The first study on this issue was reported by DePeuy et al. [5] in 1988 and they stated that HTN may create the false impression of a fixed lateral defect in patients with HTN. In 1997 Ozalp et al. [6] reported that the ratio of lateral to septal wall activity in patients with HTN and normal coronary angiography is significantly lower than nonhypertensive patients. However, such a finding is not confirmed by the study of Cecil et al. [7]. The study of Rosas et al has confirmed that hypertensive patients have endothelial dysfunction, even in the absence of coronary calcifications [8].

A recent meta-analysis of 11 studies on 888 patients seems to present the most reliable conclusion available [4]. The pooled analysis showed that MPS has a sensitivity of 90% [95% confidence interval (CI): 0.82-0.95] and a specificity of 63% (95% CI: 0.53-0.72). The area under the curve at the summary receiver-operating characteristic (SROC) graph for MPS is 83% (95% CI 0.80-0.86). These features suggest that MPS has high sensitivity and specificity for detecting CAD in patients with HTN, comparable to the accuracy reported in the general population and in the daily clinical practice [4], the value of MPS for diagnosing CAD is not degraded by the presence of HTN [9]. No matter what is the stress protocol for MPS (pharmacological or exercise stress), MPS several potential advantages in HTN patients over other diagnostic modalities, including a high diagnostic performance [4]. Therefore, cardiologists can safely consider MPS for the diagnostic approach to CAD in patients with HTN and MPS does not suffer from any limitation in hypertensive population.

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Received January 26, 2012; **Accepted** January 28, 2012; **Published** January 31, 2012

Citation: Gholamrezaezhad A (2012) Myocardial Perfusion Scintigraphy in Hypertensive Patients: Is it a Reliable Tool for CAD Screening? *J Hypertens* 1:e102. doi:10.4172/2167-1095.1000e102

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