

Perfusion debate

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Received Jul 26, 2017; accepted Jul 26, 2017
doi:10.1007/s12350-017-1026-5

If the Facts Don't Fit the Theory, Change the Facts. Albert Einstein

Stirrup and Underwood make their argument for SPECT imaging from the perspective of “If it ain't broke, don't fix it.” They acknowledge the historic value of myocardial perfusion SPECT, as well as the limitations of SPECT technology. Their comments only partially reflect the societal yearning for more precise answers about the presence, extent, and prognosis of patients with coronary artery disease.

Maddahi and Packard, on the other hand, present evidence of the increase in sensitivity, specificity, and diagnostic certainty offered by PET vs SPECT MPI. They attribute the improved clinical value of PET MPI to a combination of factors, including

1. Superior spatial resolution of PET instrumentation;
2. Increased myocardial extraction of PET tracers (especially water, ammonia and the new agent under development, fluperidaz), providing greater contrast between areas of ischemia/scar and normal myocardium;
3. The ability to calculate absolute myocardial blood flow and perfusion reserve using single or multicompartment kinetic models of dynamic image data. Objective measurement of global and regional perfusion enhances the certainty of image interpretation, and supplements the information available from the relative distribution of myocardial perfusion, available from both SPECT and PET imaging.

Overall, even though PET MPI has advantages over SPECT MPI, Stirrup and Underwood raise the question of whether the additional cost of the

radiopharmaceuticals and instrumentation enhance the clinical utility of the technically superior procedure. This is particularly vexing in view of the substantial progress made by competing technologies, such as cardiac magnetic resonance imaging and cardiac CT angiography. Due to the enhanced spatial resolution of MR and CT, a growing group of clinicians prefer these procedures for evaluation of patients with coronary disease. Additional information on the characteristics of lesions in the coronary arteries on coronary CT angiograms¹ makes the procedure particularly attractive. A major factor limiting acceptance of coronary CT angiography with measurement of perfusion, is the radiation burden of the procedure. However, technical improvements in CT detector design, which are now capable of event by event counting, will markedly reduce the radiation burden, making Coronary CT Angiography more attractive.²

Given the demand for ‘newer’ and ‘better’ by the referring clinicians, it is time to take the plunge, and for Nuclear Physicians to make the case for higher quality patient care, offered by well-established PET/CT technology.

Disclosure

Author has nothing to disclose.

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J Nucl Cardiol 2017;24:1965.

1071-3581/\$34.00

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