

## **PET/MR and PET/CT for Coronary Artery Disease: Prime Time or Not?**

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Positron emission tomography (PET) is an imaging modality that can visualize various functional and biomolecular status of target tissues, such as hemodynamic status, specific molecular targets and biochemical processes. Currently in Korea, almost all PET imaging is performed using hybrid scanners of PET/CT, and integrated PET/MRI scanners also have been used in clinical practice for 4-5 years. In coronary artery disease, PET/CT and PET/MRI are the best practical method for evaluating accurate myocardial blood flow. PET has several advantages over conventional single photon emission computed tomography (SPECT) imaging, such as lower radiation dose (approximately 10-20% of that of SPECT), shorter imaging time, and most of all, ability to measure absolute blood flow in target tissue. Despite these advantages, there has been a considerable limitation for extending clinical application of perfusion PET in Korea, because N-13 ammonia has been the only practically available imaging agent. However, it is expected that some other perfusion imaging agents will be available in 2016 or 2017, which may be an opportunity to improve accessibility of myocardial perfusion PET. On the other hand, PET/CT and PET/MR are also used for evaluating molecular characteristics of atherosclerotic plaques. Because acute coronary syndrome is caused by abrupt rupture of a plaque, identification of rupture-prone or vulnerable plaques may play an essential role in patient management. Several PET imaging agents that target for inflammation processes have been reported to be effective in identifying vulnerable plaques, and some of those agents are currently available in clinical practice. In this talk, recent changes and development in PET imaging are discussed in terms of PET/CT or PET/MR for myocardial perfusion and vulnerable plaques.