

Hybrid PET-CT imaging of coronary artery disease

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Non-invasive computed tomography (CT) coronary angiography and myocardial perfusion PET form an attractive combination for detection of coronary artery stenoses and assessment of their functional consequences in patients with suspected coronary artery disease.

Based on its high negative predictive value, CT coronary angiography can be used to reliably exclude significant coronary artery disease. However, determination of hemodynamic significance of intermediate stenosis is often uncertain based on anatomy alone. Perfusion imaging has an established role in identifying patients who can benefit from revascularization by detecting myocardial ischemia, but it does not separate microvascular dysfunction from epicardial stenosis.

By fusing images from CT angiography and PET perfusion imaging, anatomy of coronary stenoses can be accurately correlated with their functional significance. Hybrid PET/CT devices, now in wide clinical use, allow such fusion in a one-stop-shop study with acceptable radiation dose. Although still seeking its place in clinical scenarios, growing evidence suggests that hybrid PET-CT imaging of coronary anatomy and myocardial perfusion can accurately – and non-invasively – assess the existence and degree of coronary artery disease.

References

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Oct. 17

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