

Cardiac Inflammatory Disorders: The Role of PET Imaging



Positron emission tomography (PET) imaging can be useful in the diagnosis and prognosis in cardiac inflammatory disorders, including infective endocarditis, pericarditis and myocarditis, according to results of a systematic review published by *The Quarterly Journal of Nuclear Medicine and Molecular Imaging*.

See Also: [PACIFIC Trial: Comparing Non-Invasive Coronary Artery Imaging](#)

Cardiac inflammatory disorders, either primarily cardiac or secondary to a systemic process, are associated with high morbidity and mortality rates. Their diagnosis can be difficult, especially due to significant overlap in their clinical presentation with other cardiac diseases. Recent studies have assessed the potential diagnostic role of PET imaging in these patients.

Most of the available literature included in the review focuses on Fluorine-18 fluorodeoxyglucose (FDG), a tracer which has already demonstrated its use in other inflammatory and infectious processes. FDG is a glucose analogue which enters cells using the glucose transporter before being partially metabolised and trapped. As such, FDG can be used to image in-vivo glucose metabolism.

PET using FDG as well as other tracers "appears to be an accurate diagnostic tool in inflammatory cardiac disorders, and can also provide useful information regarding prognosis and response to treatment," write the reviewers. In particular, PET enables evaluation of both cardiac and extra-cardiac disease at the same time.

PET imaging can also detect physiological and metabolic changes before anatomical changes, explains the review team, led by Daniel Juneau, MD, FRCPC, of the Division of Cardiology, Department of Medicine, University of Ottawa Heart Institute, Ottawa, Canada.

"PET's ability to depict metabolic changes and abnormalities, sometimes even before the onset of any anatomical changes, can be a significant advantage over standard anatomical imaging," the reviewers note. "PET appears to be particularly useful in cases where standard investigation is non-diagnostic or equivocal."

Modern hardware mostly consists of a single scanner that integrates both PET and computed tomography (CT) components (PET-CT). With its ability to provide both functional and anatomical information, PET-CT is expected to play an ever increasing role in the investigation of cardiac inflammatory processes, including infective endocarditis, cardiac implantable electronic device infection, pericarditis, myocarditis, sarcoidosis and amyloidosis.

"However, further work is needed regarding standardisation of patient preparation and interpretation criteria," write the reviewers. Larger prospective studies are needed to determine if the integration of this imaging tool in clinical practice is cost-effective and improves patient's outcome, they add.

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