Utility of Single-Photon Emission Computed Tomography/Computed Tomography Fusion Imaging With ^{99m}Tc -Pyrophosphate Scintigraphy in the Assessment of Cardiac Transthyretin Amyloidosis

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Figure. (A,B) Technetium-99m-pyrophosphate (^{99m}Tc -PYP) scintigraphy showed moderate cardiac uptake on planar imaging (A, frontal view; B, oblique view). (C,D) Single-photon emission computed tomography/computed tomography fusion imaging clearly visualized the cardiac uptake to be in the cardiac blood pool and not in the myocardium (C, axial image; D, coronal image). (E) Cardiac magnetic resonance imaging showed no myocardial late gadolinium enhancement.

Cardiac transthyretin amyloidosis (ATTR) is increasingly recognized as an important cause of heart failure with preserved ejection fraction, and a growing public health problem with an increasing prevalence.¹ Cardiac uptake on bone scintigraphy with technetium-99m-pyrophosphate (^{99m}Tc -PYP) has been shown to have high diagnostic performance in the differentiation of cardiac ATTR from non-ATTR heart failure.^{2,3}

A 52-year-old woman with heart failure was admitted to hospital. On ^{99m}Tc -PYP scintigraphy to assess for cardiac

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amyloidosis, moderate cardiac uptake on planar imaging was seen (**Figure A,B**). Single-photon emission computed tomography/computed tomography (SPECT/CT) fusion imaging, however, clearly visualized the cardiac uptake in the cardiac blood pool, and not in the myocardium (**Figure C,D**). Subsequent cardiac magnetic resonance imaging showed no myocardial late gadolinium enhancement (**Figure E**). On endomyocardial biopsy, myocardial interstitial fibrosis and negative amyloid deposition were confirmed. The patient was finally diagnosed with dilated cardiomyopathy.

In a recent multicenter study, bone scintigraphy had >99% sensitivity and 86% specificity for detecting cardiac ATTR.² Although ^{99m}Tc-PYP physiologically stays in the cardiac blood pool and can cause false-positive scintigrams, the present report is the first to show that SPECT/CT fusion imaging can provide better and more useful anatomical information to distinguish myocardial ^{99m}Tc-PYP

uptake from tracer accumulation in the cardiac blood pool in the assessment of cardiac ATTR.

Disclosures

The authors declare no conflict of interest.

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