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IMAGE OF THE MONTH

^{18}F-florbetaben positron emission tomography detects cardiac involvement in systemic AA amyloidosis

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A 62-year-old female with known systemic serum amyloid A (AA) amyloidosis presented with signs and symptoms of new-onset heart failure. Echocardiography demonstrated mild left ventricular (LV) dilation, preserved ejection fraction, and grade II diastolic dysfunction without typical signs of cardiac amyloidosis (CA) but a profound focal hypertrophy of the free right ventricular (RV) wall (a, b). Positron emission tomography/computed tomography (PET/CT) with the amyloid-binding tracer ^{18}F-florbetaben was subsequently performed since endomyocardial biopsy was not deemed justified due to localized hypertrophy of the free RV wall. As shown in c-e, a highly increased RV tracer uptake with only moderately increased LV tracer uptake was found (retention index for RV and LV is 0.0026 and 0.0016, respectively). Tracer uptake co-localized with the echocardiographic finding of RV hypertrophy, suggesting cardiac involvement of AA amyloidosis with predominant right-sided amyloid deposition.

Amyloid-binding radiotracers have already received approval for beta-amyloid brain imaging. Previous exploratory studies demonstrated their high diagnostic accuracy for CA of transthyretin or light-chain type [1–3], yet no study has evaluated their utility in an AA amyloidosis cohort. While endomyocardial biopsy is an established method for diagnosing CA, it may be prone to sampling error in the case of localized disease. This report demonstrates the sensitivity of ^{18}F-florbetaben PET/CT to detect AA-CA. PET/CT provides high image quality and quantitative measures of tracer uptake, thus making detection, localization, and absolute quantification of amyloid feasible and has the potential to substitute or even outperform endomyocardial biopsy, particularly in the case of focal or early-stage disease.

This article is part of the Topical Collection on Cardiology

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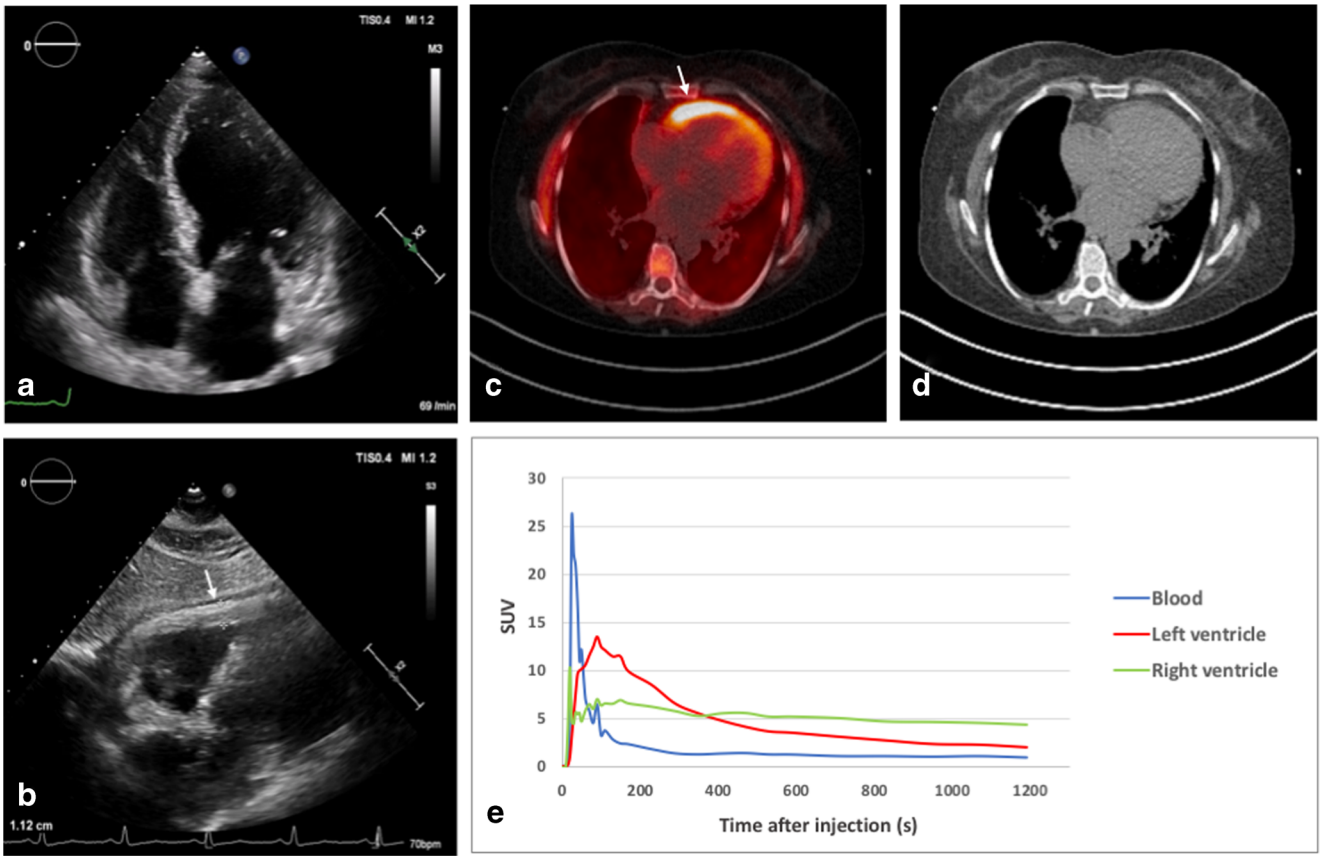

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Data availability Clinical and image data are available for review upon request.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflicts of interest.

Ethical approval This article does not contain any studies with animals performed by any of the authors. All procedures performed involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the principles of the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

Consent to participate Not applicable.

Consent for publication Consent was obtained from the patient for the anonymous publication of clinical and imaging data for scientific purposes.

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