

# RELIABILITY OF <sup>124</sup>I-EVUZAMITIDE IMAGING AND QUANTITATIVE AGREEMENT IN PATIENTS WITH AL AND ATTR SYSTEMIC AMYLOIDOSIS



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## BACKGROUND

<sup>124</sup>I-evuzamitide is a novel pan-amyloid PET/CT imaging agent being developed for the diagnosis of amyloidosis and the detection of systemic amyloid deposits. To assess the feasibility of <sup>124</sup>I-evuzamitide PET/CT imaging to monitor amyloid load, a repeatability clinical study was performed and the data analyzed using an automated 3-dimensional (3D) image quantification method.

## METHODS

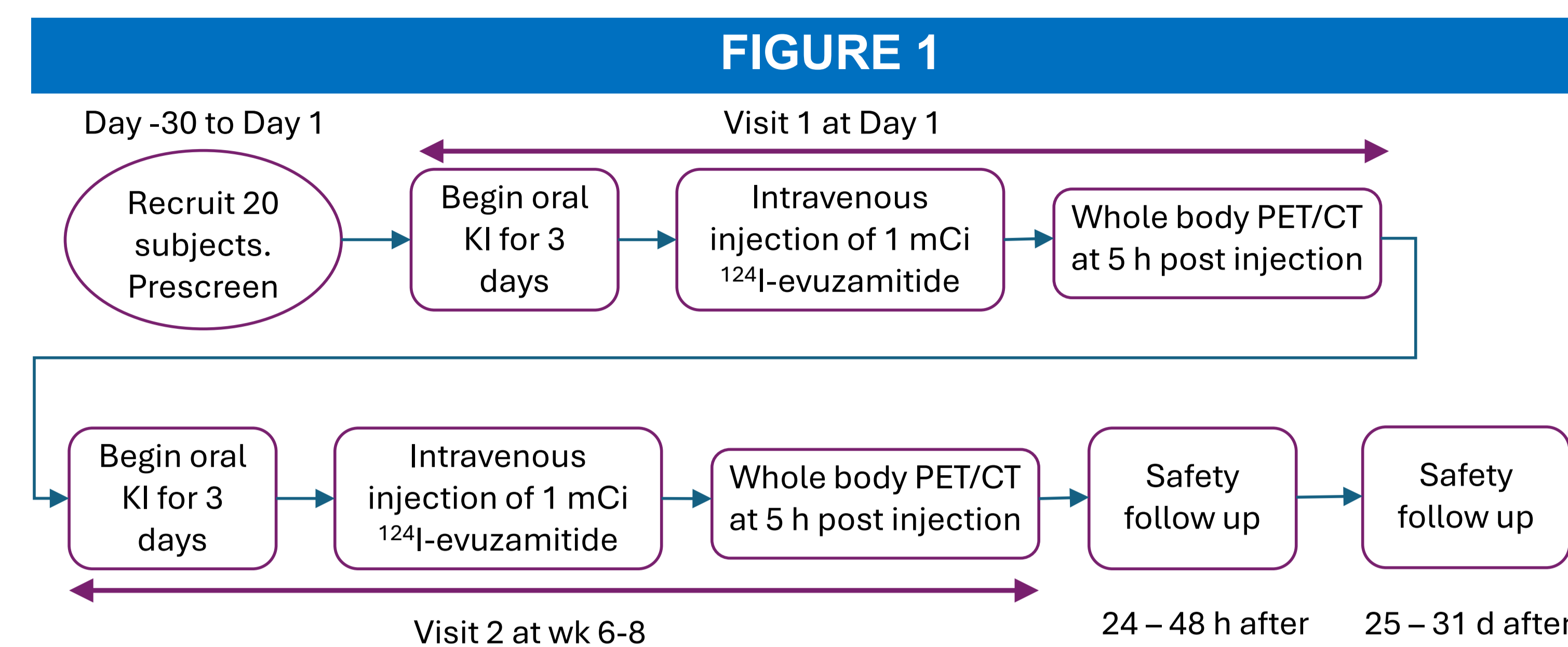
Subjects received 1 mCi of <sup>124</sup>I-evuzamitide by IV infusion on Day 1 and Week 6. Whole body PET/CT images were acquired at ~5 h post-infusion. The 3D volume of the heart and five other organs were segmented from CT data using an automated trained deep learning algorithm and the organ radioactivity was quantified (AIQ Solutions, Madison WI). For each organ we calculated the mean and SD of the standardized uptake value (SUV), the SUV ratio (SUVR; normalized to blood pool) and percent injected dose (%ID). The intraclass correlation coefficient (ICC) was assessed in addition to the organ-specific, between-scan bias and the upper and lower 95% limits of agreement (LOA) between the two scans after natural log transformations were applied.

## RESULTS

Twenty-seven (*n*=27) patients were included (64% AL, and 36% with ATTR amyloidosis). For cardiac uptake the SUVmean and %IDmean yielded excellent reliability (ICC=0.95) and bias of 1 with 95% upper and lower LOA of 0.81 and 1.23, indicating that ~20% change in the <sup>124</sup>I-evuzamitide cardiac uptake represents a real change. The mean features provided reliable analytics (ICC≥0.9) with good agreement for every organ.

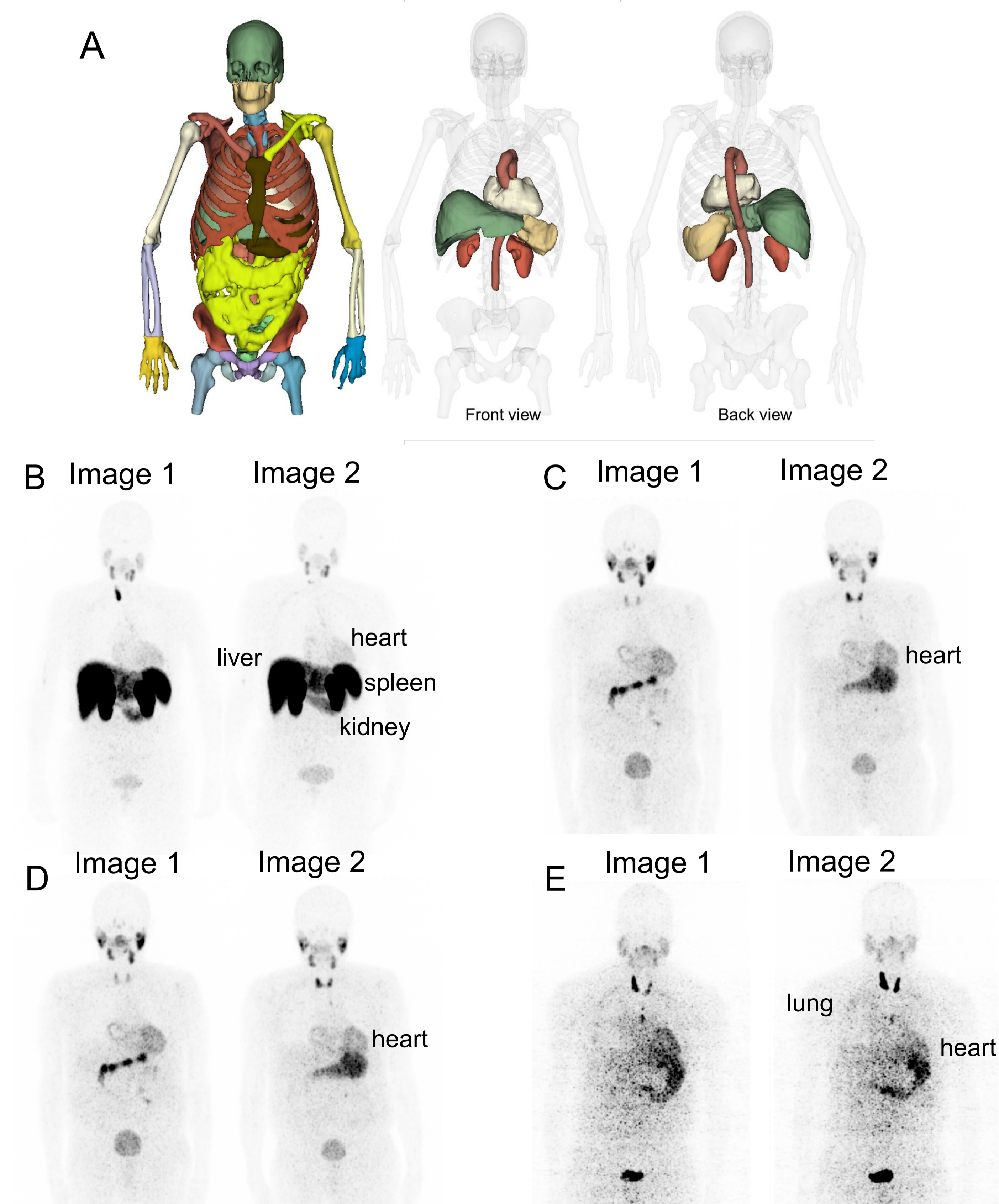
## DISCUSSION

Automated quantitation of <sup>124</sup>I-evuzamitide organ uptake following repeat PET/CT imaging showed excellent reliability notably for cardiac uptake using SUVmean and %IDmean, supporting the robust imaging characteristics of <sup>124</sup>I-evuzamitide. These positive data provide support and guidelines for estimating change in amyloid burden and for its potential use as a method for monitoring organ-specific amyloid load in patients with systemic amyloidosis.



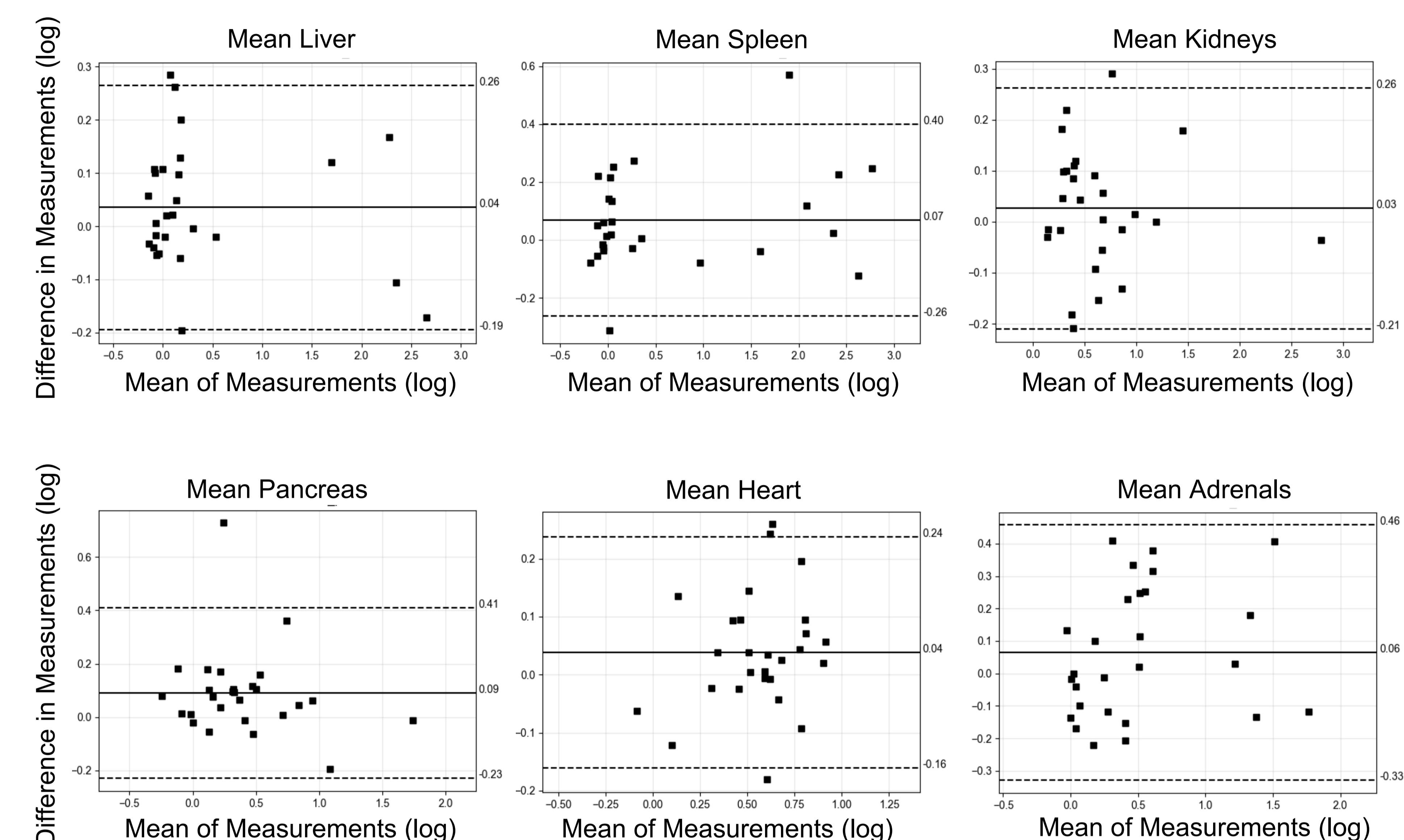
A test-retest study was conducted at three private clinics (non-academic) with no prior experience using <sup>124</sup>I-evuzamitide imaging. In general, image quality in this study was lower than that observed in studies conducted at academic centers.

FIGURE 2



A. Volume rendering showing the output of anatomic segmentation from the AIQ Solutions software (left), highlighting the liver, spleen, kidneys, heart, and aorta (right). B-E. Representative maximum intensity (SUV) images from the study showing a comparison of the image 1 and image 2 data in patients with varied anatomic uptake of radiotracer in amyloid SUV range 0-15).

FIGURE 3



Bland Altman plots of test-retest SUVR metrics (SUV normalized by aorta blood pool uptake). The bias, upper, and lower limits of agreement are displayed in log scale, as SUVR values are log transformed before performing the calculations.

TABLE 1

Summary of repeatability analysis of automated organ <sup>124</sup>I-evuzamitide quantitation (regardless of positive or negative radiotracer uptake). Repeatability was assessed for SUV, SUVR, and percent injected dose (%ID). Values are presented after transforming back to SUVR, SUV, and %ID units after undoing log transform.

Organ	SUVR			SUV			Percent Injected Dose (%ID)		
	ICC	Bias (B)	(Lower, Upper LOA)	ICC	Bias (B)	(Lower, Upper LOA)	ICC	Bias (B)	(Lower, Upper LOA)
Liver	0.983	1.04	(0.82, 1.3)	0.976	0.99	(0.78, 1.27)	0.98	0.99	(0.78, 1.27)
Spleen	0.965	1.07	(0.77, 1.49)	0.97	1.03	(0.75, 1.42)	0.973	1.03	(0.75, 1.42)
Kidneys	0.995	1.03	(0.81, 1.3)	0.993	0.99	(0.74, 1.32)	0.993	0.99	(0.74, 1.32)
Pancreas	0.963	1.09	(0.79, 1.51)	0.889	1.05	(0.77, 1.44)	0.907	1.05	(0.77, 1.44)
Heart	0.897	1.04	(0.85, 1.27)	0.949	1.00	(0.81, 1.23)	0.945	1.00	(0.81, 1.23)
Adrenals	0.926	1.07	(0.72, 1.58)	0.911	1.02	(0.68, 1.55)	0.912	1.02	(0.68, 1.55)

## DISCLOSURE INFORMATION

JSW: Co-founder, interim CSO, and shareholder in Attralus Inc. Research funding from Attralus Inc. Patent rights in peptides used for amyloid imaging, licensed to Attralus.  
 SG: Co-founder, COO, and shareholder in Attralus Inc.  
 SD: Research funding from Attralus Inc.  
 AW: Employee of AIQ Solutions