Introduction
Psoriasis, a chronic inflammatory skin disease, is associated with increased cardiovascular (CV) risk including stroke, MI and major adverse cardiovascular events (Fig 1).

We have previously shown that vascular inflammation (VI) target-to-background ratio (TBR) by FDG PET/CT relates to PASI score (Fig 2).

Psoriasis is also associated with decreased Aortic Distensibility (AD), provides an ideal clinical model to study inflammatory atherogenesis.

Hypothesis
Whether improvement in aortic vascular inflammation by FDG PET/CT is associated with improvement in aortic distensibility by MRI is not known.

Thus, we hypothesized that an improvement in vascular inflammation would lead to an improvement in aortic distensibility at one-year.

Methods
Consecutively recruited psoriasis patients (N=50) underwent FDG PET/CT and cardiometabolic phenotyping at baseline and at 1-year. Vascular inflammation was assessed as TBR (Fig 3).

Descending aorta contours on MRI were traced throughout the cardiac cycle [Qflow, Medis] to measure AD (Distensibility= Δ % Vessel area/pulse pressure) (Fig 4).

Longitudinal changes in aortic VI and AD were analyzed by multivariable regression.

Results
The cohort was middle-aged, at low Framingham Risk (FRS), and had mild to moderate psoriasis (Table 1).

At follow-up, the total cohort had a median improvement in PASI score of -40% (p<0.001) with use of biological therapy (58%).

Aortic VI decreased by -8% (mean±SEM: 1.81±0.03 vs 1.67±0.04, p=0.04) while AD increased by 10% (0.61 ± 0.03 vs 0.67 ± 0.04, p=0.04).

Moreover, reduction in aortic VI was associated with an improvement in AD beyond traditional CV risk factors, statin use, and systemic/biologic psoriasis therapy (β=-0.35, p=0.04).

Conclusions
Improvement in aortic VI by FDG PET/CT is associated with improvement in AD by MRI at 1-year, suggesting that quelling VI may have a favorable impact on functional characteristics of the aorta.

These findings further advance our understanding of the role of inflammation in CV disease and the ability of PETMRI to provide valuable information to enhance our understanding of CV disease.

Our novel findings can help improve the accuracy of CVD risk prediction, enable physicians to make evidence-based decisions, and decrease the global economic burden of cardiovascular disease on healthcare systems.

However, ongoing randomized trials are needed to confirm these findings.

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