Background Positive remodeling index (RI) and presence of low attenuation non-calcified plaque (LANCP) are characteristic vessel changes in unstable coronary plaques. We sought to characterize LANCP and positive RI in patients with SLE.

Methods A total of 72 patients who met the ACR or SLICC classification criteria for SLE had CT angiogram studies, 30 of which had follow up CT angiograms. A total of 100 healthy controls who had two CT angiograms were included in the study. Each noncalcified plaque (NCP) detected within the vessel wall was evaluated for minimum CT density and vascular remodeling index. A LANCP was defined as an NCP with a density <30 Hounsfield units. Lesions with remodeling 0% were considered to have positive RI. T-test was used to evaluate baseline characteristics between lupus patients and controls. Paired t-test or Wilcoxon signed ranks test was used to compare LANCP volume and RI between baseline and follow-up. Fisher's exact test was used to evaluate the association between change in LANCP, RI, demographic and clinical variables.

Results Lupus patients had a significantly higher burden of LANCP compared to healthy controls in all age subgroups except in those >60 years of age. LANCP volume was associated with age (p<0.01) and body mass index (p<0.01). No significant differences were observed between RI in lupus and controls at baseline. Despite a significant progression of the total noncalcified plaque burden in lupus compared to controls (p<0.0001), the LANCP in lupus patients regressed (p<0.001). No demographic or clinical differences were observed between lupus patients whose LANCP progressed and those whose LANCP regressed. Lupus patients who were not treated with statins had a more significant regression of their LANCP burden (p<0.01) compared to controls who were on statins, while lupus patients who were taking statins had a significant progression (p<0.01).

Conclusions Lupus patients have a significantly higher burden of LANCP compared to healthy controls in all age subgroups except in those >60 years of age. The LANCP burden regresses more rapidly over time in lupus compared to controls. Surprisingly, the most significant LANCP plaque volume regression was seen in lupus patients who were never treated with statins, while the most significant progression was observed in those taking statins. Positive RI was ubiquitous, with no evidence of progression or differences compared to controls. These characteristic vessel changes may identify SLE patients at need for more frequent noninvasive cardiac monitoring.

Funding Source(s): The Hopkins Lupus Cohort was funded by AR 69572.