Background: Hydroxychloroquine (HQC) cardiotoxicity remains an underrecognized condition. Diagnosis ultimately relies on invasive endomyocardial biopsy (EMB) and non-invasive screening methods are warranted. Strain imaging is a novel tool to detect early subclinical left ventricular (LV) dysfunction and may have a role in screening for HQC cardiotoxicity (1). Strain measures systolic deformation indices that when decreased can predict cardiovascular outcomes more accurately than LV ejection fraction (2).

Objective: To assess whether high HQC cardiotoxicity risk is associated with a specific strain pattern in a group of patients with SLE and end-stage renal disease (ESRD).

Methods: This was a retrospective study in a tertiary care center in New York on a group of patients with an established diagnosis of SLE, ESRD and cardiomyopathy on the index echocardiogram followed between years 2003 and 2019. The patients were stratified into two groups: high risk HQC toxicity group was defined as either a cumulative HQC dose &gt;225 g and/or an endomyocardial biopsy confirming HQC toxicity. Low/moderate risk group was defined as a cumulative dose of HQC &lt; 1000 g. Clinical, demographic, electrocardiographic and echocardiographic strain parameters were compared between the groups.

Results: A total of 16 patients were included. Two patients had EMB consistent with HQC induced toxicity and 3 patients had cumulative HQC doses &gt; 1000 g. There were no significant differences in the baseline demographic characteristics between the two groups. Compared to patients with low/moderate risk, patients in the high risk group had a lower heart rate at the time of the echocardiogram (69 vs 87 beats per minute, p=0.08) and a higher frequency of LV hypertrophy (40% vs 9.1%, p=0.02). Strain analysis showed that both groups had compromised LV global longitudinal strain (GLS) and global cross-sectional strain (GCS). However, compared to the low/moderate risk group, the high risk group had a weaker LV GLS (-12.3% vs -14.9%, p=0.27).

Conclusions: We report an association of higher HQC cardiotoxicity risk and impaired strain in a set of SLE ESRD patients. Standard echo measures did not differentiate between high and low/moderate risk patients. Although the findings did not reach statistical significance, given the small sample size, results are still suggestive of a possible utility of strain echocardiography for detection of early HQC toxicity.