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### SCCT Feature: CTA-assessed LV metrics correlate with coronary plaque burden

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Harvard researchers used CT angiography (CTA) to determine that certain left ventricular (LV) metrics correlate with the degree of coronary plaque burden in patients without LV hypertrophy. The findings could provide an indication to intensify medical therapy in patients with subclinical coronary artery disease (CAD) and hypertension, according to a study presented at last week's Society of Cardiovascular CT (SCCT) meeting in Orlando, Fla.

"The literature says that patients with increased LV mass, LV mass index and concentric remodeling have a higher risk of experiencing a major adverse cardiac event in the future. We wanted to see if the risk is associated with having more coronary artery disease," lead author Quynh A. Truong, MD, told *Cardiovascular Business News*.

Truong, an instructor in radiology at Harvard Medical School and a cardiologist at Massachusetts General Hospital, and colleagues sought to determine whether LV mass (LVM), LVM index (LVMI), and the LV geometric pattern of concentric remodeling are associated with the extent of CAD in patients without left ventricular hypertrophy (LVH).

They assessed a cohort of 337 patients as part of the Rule Out Myocardial Infarction using Computer Assisted Tomography (ROMICAT) trial. The patients all underwent a 64-slice CTA to assess CAD and LVM. They found that patients with more than four segments of coronary plaque--out of the 17-segment model--had higher LVM (delta 15.1 g) and LVMI (delta 5.5 g/m<sup>2</sup>) than those without CAD.

After multivariable adjustment, LVM and LVMI remained independently predictive of the extent of coronary plaque, with 0.24 segments more plaque for every 20 g increase of LVM and 0.29 segments more plaque for every 10 g/m<sup>2</sup> increase of LVMI.

"This is the first time this has been shown using contrast-enhance CT," Truong said. "Similar studies have been done using calcium scores. The benefit of our study is that we can assess for noncalcified, calcified and mixed plaque."

Concentric remodeling patients had 1.2 segments more plaque than those with normal geometry. There was a gradient stepwise increase in the percentage of patients with concentric remodeling and their extent of coronary plaque. Patients with more than four segments of plaque had a two-fold increase risk of having concentric remodeling as compared to those without CAD.

"There are those who believe concentric remodeling in patients with normal LV mass index is a benign process," Truong said. "The Valiant study, using echo, showed a three-fold increase of MACE and mortality in heart failure patients with concentric remodeling. We conclude that an increase in LV mass index and the presence of concentric remodeling--shown by any imaging modality--in patients without LV hypertrophy indicates they have a greater degree of plaque burden."

She continued: "We don't think it's a benign process. We think that patients with subclinical CAD or hypertension who have an increase in LV mass or concentric remodeling can benefit from intensifying their medical therapy."

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