

Aortic Dimensions and Subclinical Atherosclerosis in Former National Football League Athletes

Wednesday 11:40-11:50 AM | SSK04-08 | Room: S504AB

PURPOSE

To evaluate whether past participation in the National Football League (NFL) is associated with increased prevalence of ascending aortic dilation and coronary artery calcium (CAC) on cardiac CT.

METHOD AND MATERIALS

This is a retrospective, cross-sectional study of 206 former National Football League (NFL) athletes compared with 759 matched male subjects from the XXX Heart Study (XHS) older than 40 years old with body mass index ≥ 20 kg/m². Mid-ascending aortic dimensions were obtained from non-contrast, multidetector cardiac-gated CT scans performed as part of a screening protocol (NFL) or as part of the XHS. CAC scores were obtained using the Agatston method. Multivariate logistic regression was performed to evaluate predictors of aortic size > 4.0 cm, CAC >0 , and CAC >100 in each cohort.

RESULTS

Compared to the control group, former NFL athletes had significantly larger ascending aortic diameters (3.8 ± 0.5 vs. 3.4 ± 0.4 cm; $p < 0.0001$). A significantly higher proportion of former NFL players had an aorta of > 4.0 cm (29.6% versus 8.6%, $p < 0.0001$). After adjusting for age, race, body surface area, systolic blood pressure, history of hypertension, current smoking, diabetes, and lipid profile the former NFL players still had significantly larger ascending aortas ($p < 0.0001$). Former NFL players were twice as likely to have an aorta > 4.0 cm after adjusting for the same parameters. CAC scores were similar in both groups as was the distribution across CAC score categories (CAC=0, 1-100, and >100).

CONCLUSION

While CAC scores are similar between former NFL athletes and controls, ascending aortic dimensions are significantly larger in former NFL athletes even after accounting for their size, age and cardiac risk factors. Whether this translates to an increased risk is unknown and requires further evaluation.

CLINICAL RELEVANCE/APPLICATION

Past exposure to the hemodynamic effects of repetitive strenuous exercise among elite athletes may have lasting effects on aortic dimensions.