INCREASING CAROTID CALCIFICATIONS ARE SIGNIFICANTLY ASSOCIATED WITH OBSTRUCTIVE CAROTID ARTERY DISEASE

ACC Poster Contributions
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Background: Increasing coronary artery calcium is directly associated with an increasing risk of obstructive heart disease. Whether a similar association exists between the amount of carotid artery calcium and the presence of obstructive carotid disease is unknown. In this study, we looked for an association between the amount of carotid artery calcium and the presence of ≥ 25% obstructive carotid disease.

Methods: A total of 528 individuals underwent non-contrast CT scanning of their distal common carotid arteries, carotid bulbs, and proximal internal carotid arteries. Carotid calcium was initially quantified by the Agatston method. Stenoses were detected by subsequent CT angiography of the carotid arteries. The presence of a ≥ 25% carotid stenosis was analyzed as a function of carotid calcium scores and various cardiovascular risk factors.

Results: Twenty nine of the 528 participants were found to have a ≥ 25% carotid artery stenosis. There was a significant association noted between the magnitude of carotid calcium and the presence of a ≥ 25% carotid stenosis (p<0.001). Those with a ≥ 25% carotid artery stenosis exhibited a median (25th,75th percentile) carotid calcium score of 617 (195,1093) while those without a ≥ 25% carotid artery stenosis had a median carotid calcium score of 36 (0,216). Conversely, when no carotid calcium was detected, a ≥ 25% carotid artery stenosis was rarely encountered. This association remained significant after adjustment for age, hypertension, diabetes, hyperlipidemia, and tobacco use.

Conclusions: Increasing carotid calcifications are significantly associated with obstructive carotid artery disease. The absence of any detectable carotid calcium suggests a low probability of a ≥ 25% carotid artery stenosis. Detection of significant carotid calcium may identify individuals at risk for significant obstructive carotid vascular disease.