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## Atherosclerosis

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# Nonobstructive aortic valve calcification: a window to significant coronary artery disease

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## Abstract

*Background:* Aortic valve calcification without obstruction (AVC) is common in the elderly and is associated with increased cardiovascular mortality and morbidity. We hypothesized that AVC detected by transthoracic echocardiography (TTE) is a marker for significant coronary artery disease in patients undergoing coronary angiography.

*Methods:* The study group included 388 patients with AVC (259 males, 129 females; mean age  $72.2 \pm 9$  years) who underwent coronary angiography for various indications. Data were compared with 320, age- and sex-matched patients without AVC who underwent coronary angiography for the same indications. AVC was detected in TTE as focal areas of increased echogenicity and thickening of the aortic-valve leaflets without restriction in motion. Significant obstructive coronary artery disease was defined as either a  $\geq 70\%$  reduction of the internal diameter of the left anterior descending, right coronary, or left circumflex artery distribution or a  $\geq 50\%$  reduction of the

internal diameter of the left main coronary artery. Risk factors for atherosclerosis including hypertension, smoking, hypercholesterolemia and diabetes were also investigated. *Results:* Compared with control group, the AVC group had a higher prevalence of significant coronary artery disease (90 vs. 85%,  $P=0.019$ ), and a trend for lower frequency of coronary arteries without obstruction (6 vs. 9%,  $P=0.11$ ); a trend was also noted for 3-vessel disease (38 vs. 33%,  $P=0.14$ ). Multivariate analysis identified age ( $P=0.0001$ ), sex ( $P=0.0001$ ), hypercholesterolemia ( $P=0.005$ ) and AVC ( $P=0.02$ ) as independent predictors for significant coronary artery disease. *Conclusions:* There is a significant association between AVC and significant coronary artery disease in patients undergoing coronary angiography. Thus AVC can serve as a window to atherosclerosis of the coronary arteries. These results reinforce a previous observation regarding association between AVC and increased risk of cardiovascular morbidity.



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## Keywords

Aortic valve calcification; Coronary artery disease; Atherosclerosis

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