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Multicentre age and gender distribution of coronary artery calcification as measured by four-slice computed tomography in 5,345 people

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Background: Multi-slice computed tomography (MSCT) has emerged as an alternative to the electron-beam computed tomography (EBCT) for assessing calcified atherosclerotic plaque burden. Recently, standard image acquisition protocols and normal distribution patterns for calcium scoring in asymptomatic individuals have been presented for 4-slice scanners. In this study, we evaluated the normal distribution patterns for four institutions to determine the correlation between the patterns and establish the cumulative pattern.

Methods: 5,345 (3911 male, 1434 female) people with no symptoms of coronary artery disease received a MSCT calcium score. All image acquisitions were performed using a 4-slice CT scanner (Mx8000, Philips) with a prospective ECG gating technique. Each acquisition was scored using the traditional Agatston methodology (Maximum, Step, Area) with a threshold of 130.

Results: Calcium was detected in 2477 (63%) men and 589 (41%) women. Institutions contributed 74, 14, 10 and 3% of the studies, respectively. For the age and gender category with the largest number of people, there was good agreement between institution results. Age and gender specific percentiles for the cumulative group were established at the 25th, 50th, 75th, and 90th levels.

Conclusions: This multi-center study establishes a 4-slice CT normal distribution for people asymptomatic for coronary artery disease for a standard image acquisition protocol. No geographic differences in calcium scoring distribution patterns among the four institutions could be detected.