

Evaluation of Coronary Artery Calcium Scoring in ASCVD Risk Assessment

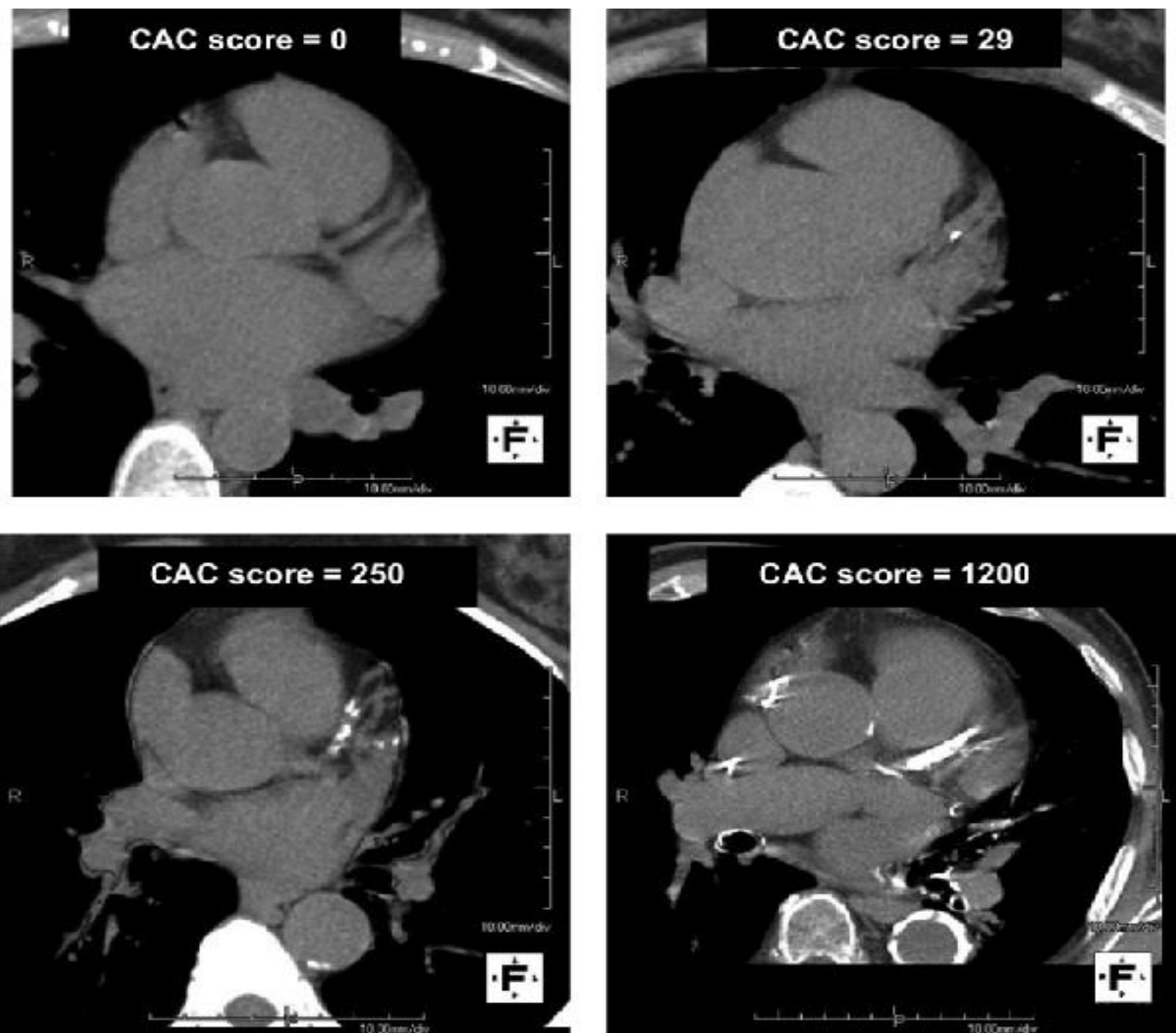
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Introduction

- Atherosclerotic cardiovascular disease (ASCVD) is the leading cause of death worldwide with coronary artery disease (CAD) accounting for approximately half of those deaths⁵.
- Total risk scores, including Framingham risk score, provide quick, cost-effective risk stratification and statin therapy recommendations, however, information is based on predetermined demographic criteria instead of individualized findings^{1,2,5}.
- Coronary Artery Calcium Score (calcium scoring) provides important risk calculation in patients otherwise deemed low-to-intermediate risk as coronary artery calcium is *exclusively* present in ASCVD and absent in normal arteries⁷.

Methods

- A review of the literature was conducted to establish the role of calcium scoring in clinical practice.
- Two landmark studies, the Framingham Heart Study (FHS)³ and Multi-Ethnic study on subclinical atherosclerosis (MESA)⁶, were included for their groundbreaking research and continued use in the clinical setting.
- Single-center studies and those concerned with acute symptomatology were excluded.



How does it work?

- A calcium score is a numeric value calculated using the Agatston method to measure the total calcium volume seen in a non-contrast cardiac CT scan with synchronous ECG.
- Scores range 0 to > 1000. Persons with a calcium score > 400 are considered high risk with a 90% chance for a cardiovascular event related to their ASCVD.
- A percentile⁶ is calculated alongside the calcium score using the data obtained in the MESA study which provides additional risk stratification based on age, gender, and ethnicity.
- A patient can have a moderate calcium score but a high percentile and be considered a higher risk than their calcium score alone may indicate.
- Increased level of coronary artery calcium has been associated with major cardiac events and is an indicator to pursue further cardiac testing in previously untested patients.

Implications for Practice

- Identifying asymptomatic yet at-risk patients is the cornerstone of preventative disease management. Multiple studies show individual ASCVD risk categories and statin therapy can be reconsidered based on the presence, or lack thereof, of coronary artery calcium¹.
- At this time, calcium scoring holds a 2b level of recommendation with the ACC/AHA, recommending use when the information could modify a patient's anticipated treatment plan based on existing risk calculators.
- Evidence suggests patients are more likely to implement meaningful lifestyle changes with the data provided by calcium scoring instead of traditional risk scores alone.
- Calcium scoring is not covered by most insurance carriers; it costs approximately \$100.

Traditional 10-year ASCVD risk score	ASCVD risk estimate alone	CACS = 0	CACS > 0
< 5%	NO statin indicated	NO statin indicated	NO statin indicated
5 – 7.5%	Consider statin	NO statin indicated	Consider statin
7.5 – 20%	Recommend statin	NO statin indicated	Recommend statin
> 20%	Recommend statin	Recommend statin	Recommend statin