





Opportunistic Screening of Coronary Artery Calcification on Non-gated Conventional CT Scans

Using Artificial Intelligence Integration

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Introduction

- Recent advancements in artificial intelligence (AI) led to the development of automatic Coronary artery calcification (CAC) analysis based on chest CT scans.
- The objective of this study is to assess the impact of Al-based CAC evaluation on improving the allocation of add-on therapies and further evaluation.

Methods

- We used a novel propriety Al software to estimate CAC from non-gated, non-contrast chest CT scans. Patients were categorized into groups: low CAC 0-99 Agatston unit (AU), moderate CAC 100-399AU, and high CAC ≥ 400 AU (Figure 1).
- Exclusion criteria included age > 75 years, prior myocardial infarction, percutaneous coronary intervention (PCI), coronary artery bypass graft (CABG), life expectancy < 2 years, and lack of access to medical records.
- Patients classified as **high CAC** were invited to a dedicated clinic to perform a risk factor and clinical assessment, initiate appropriate medication, and refer to further testing as needed.
- For **low-moderate CAC**, referring physicians were informed of CAC status, encouraging preventive management.

Results

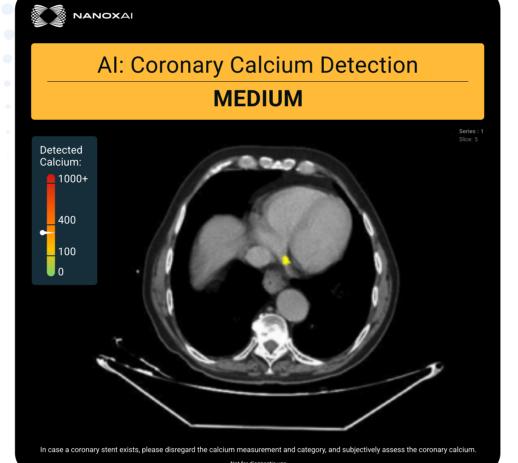
- 996 eligible patients between January 1th, 2023 to February 29th, 2024 were evaluated for inclusion. 302/996 (30%) were excluded: 196 due to lack of access to medical records and 106 for medical reasons.
- Out of **694** enrolled patients, **53** (7.6%) patients were classified as high CAC, **184** (26.5%) as moderate, and **457** (65.9%) as low CAC (Figure 2). At the dedicated clinic for high CAC patients, Statin prescriptions were verified for all patients.
- **Fourteen** patients were referred to myocardial perfusion imaging, of which **4** were referred for invasive coronary angiography: one underwent PCI (Figure 3, case I), one referred to CABG (Figure 3, Case II), the third was diagnosed with a chronic total occlusion of the Posterolateral branch and did not undergo PCI, and the last refused to undergo angiography.

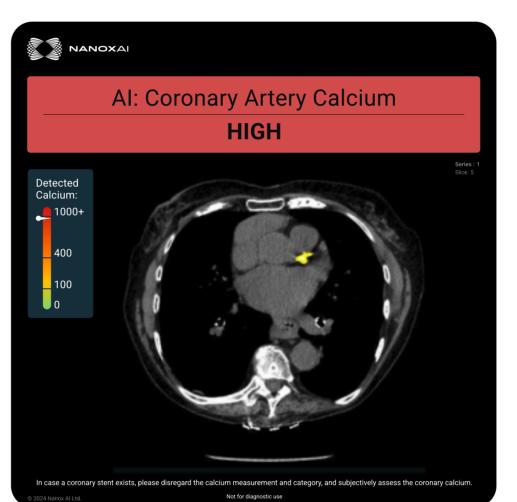
Conclusions

This ongoing study indicates routine CAC quantification using AI software on chest CT scans can identify patients who may benefit from preventive cardiology services. Further follow-up is required to assess its clinical impact.

Figure 1
Software stratification calcium burden







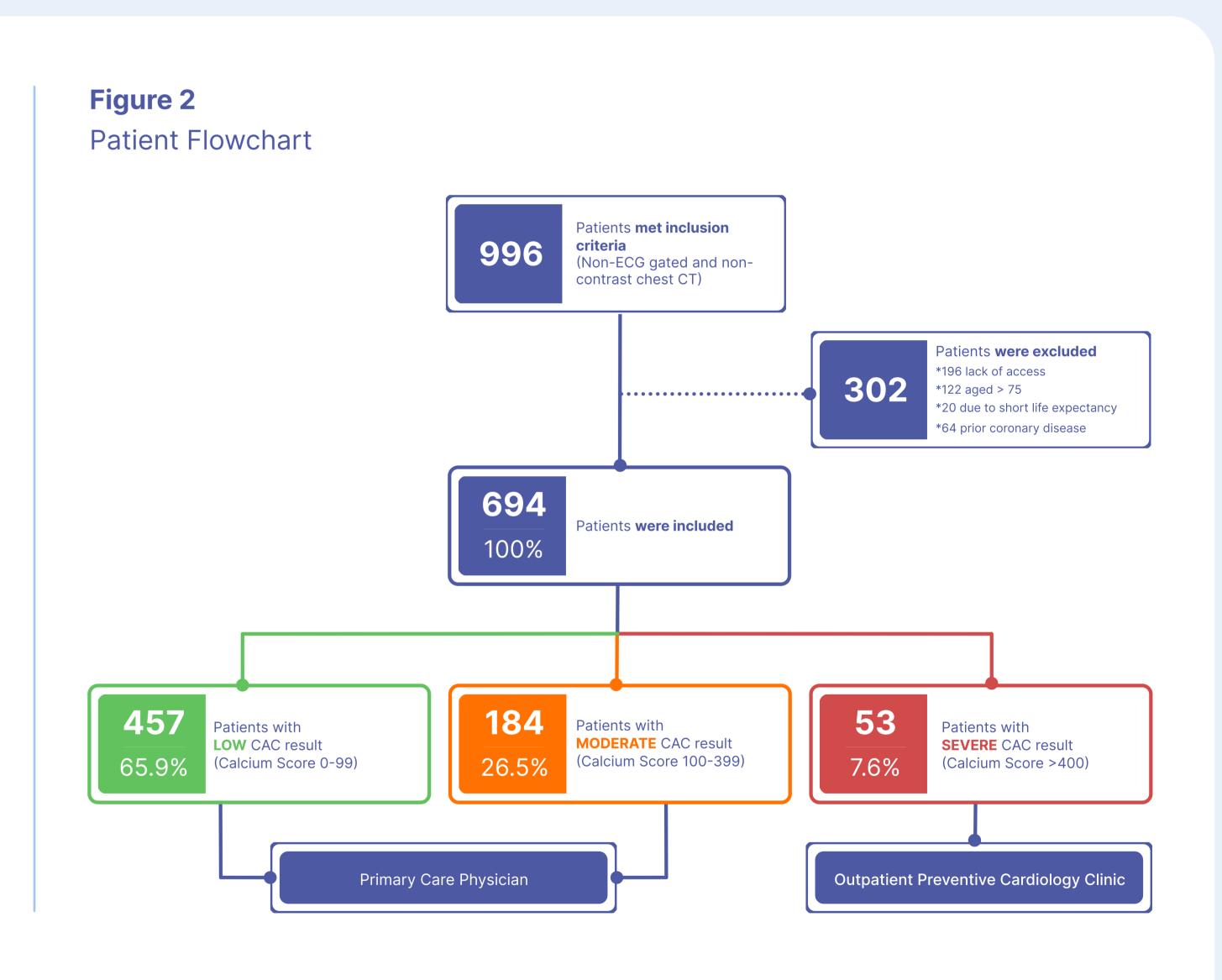
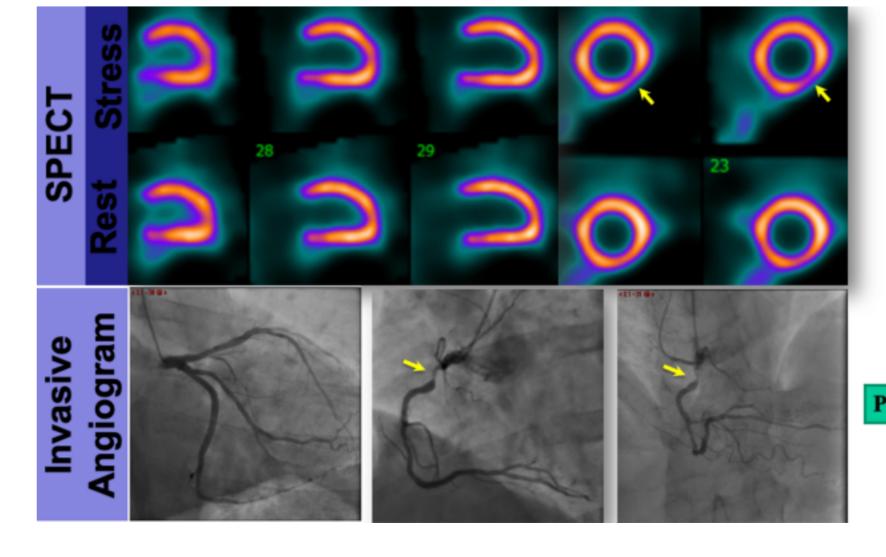


Figure 3 Case I



CI

Figure 3
Case II

