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Massive Left Ventricular Calcification in a Patient with Normal Serum Calcium Level

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Keywords
Left ventricular calcification
Non-contrast cardiac computed tomography
Myocardial infarction

Case
94 years old male presented to the cardiology clinic for regular-routine follow-up. He has an extensive medical history remarkable for two episodes of myocardial infarction (MI); eight and thirteen years ago with stent revascularization, ischemic cardiomyopathy, implantable cardioverter defibrillator, paroxysmal atrial fibrillation, hypertension, hyperlipidemia, diabetes and stroke. He was doing well without any recent chest pain and can walk a reasonable distance without shortness of breath. Lab investigation revealed normal kidney function and calcium levels. Echocardiography revealed a reduced left ventricular (LV) ejection fraction of 25%, diastolic dysfunction, severe anteroseptal hypokinesis, otherwise normal LV. A recent pharmacological stress myocardial single-photon emission computed tomography imaging (SPECT) showed a large fixed defect in mid to distal anterior wall, proximal to distal inferior wall and septum which corresponds with his previous MI history, while did not show stress induced ischemia. He underwent a non-contrast cardiac CT that demonstrated image for coronary artery calcium scoring that demonstrated a high score. Also, there was a massive calcification of the left ventricular in the anterior, apical and septal walls (Figure 1).
This case demonstrates a rare massive LV calcification visualized on non-contrast cardiac CT in a patient with history of MI. Localized or mild degree of myocardial calcification after MI is common; however diffuse extensive LV calcification is rare. Cardiac calcification can result from calcium deposition in dead tissues\(^1\) (dystrophic calcification) which happens after MI, ventricular aneurysm, myocarditis or severe sepsis\(^2\). However, calcification can happen in normal cardiac tissues due to high serum calcium or phosphorus levels (metastatic calcification)\(^2\). The possible mechanism of dystrophic calcification is decreased production of carbon dioxide in slowly metabolizing tissue causing relative tissue alkalinity which reduce calcium solubility\(^3\). Cardiac CT is a good imaging modality to identify this incidental finding that was not detected by Echocardiography and cannot be visualized by SPECT. LV calcification may lead to restrictive cardiomyopathy which can be associated with worse outcome\(^4\).

References

Figures Legends

**Figure 1**
Non-contrast computed tomography image showing extensive calcification of the left ventricular myocardium. A- Axial view. B- Axial view with maximal intensity projection. C- Oblique view. D- Oblique view with maximal intensity projection. LV= left ventricle; RV= right ventricle; ICD= implantable cardioverter defibrillator wires; LAD= left anterior descending artery; LCX= left circumflex artery.