



Look what we found...:Utility of CAC score in a high risk patient with overt hyperthyroidism and “normal” lipid profile

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Introduction

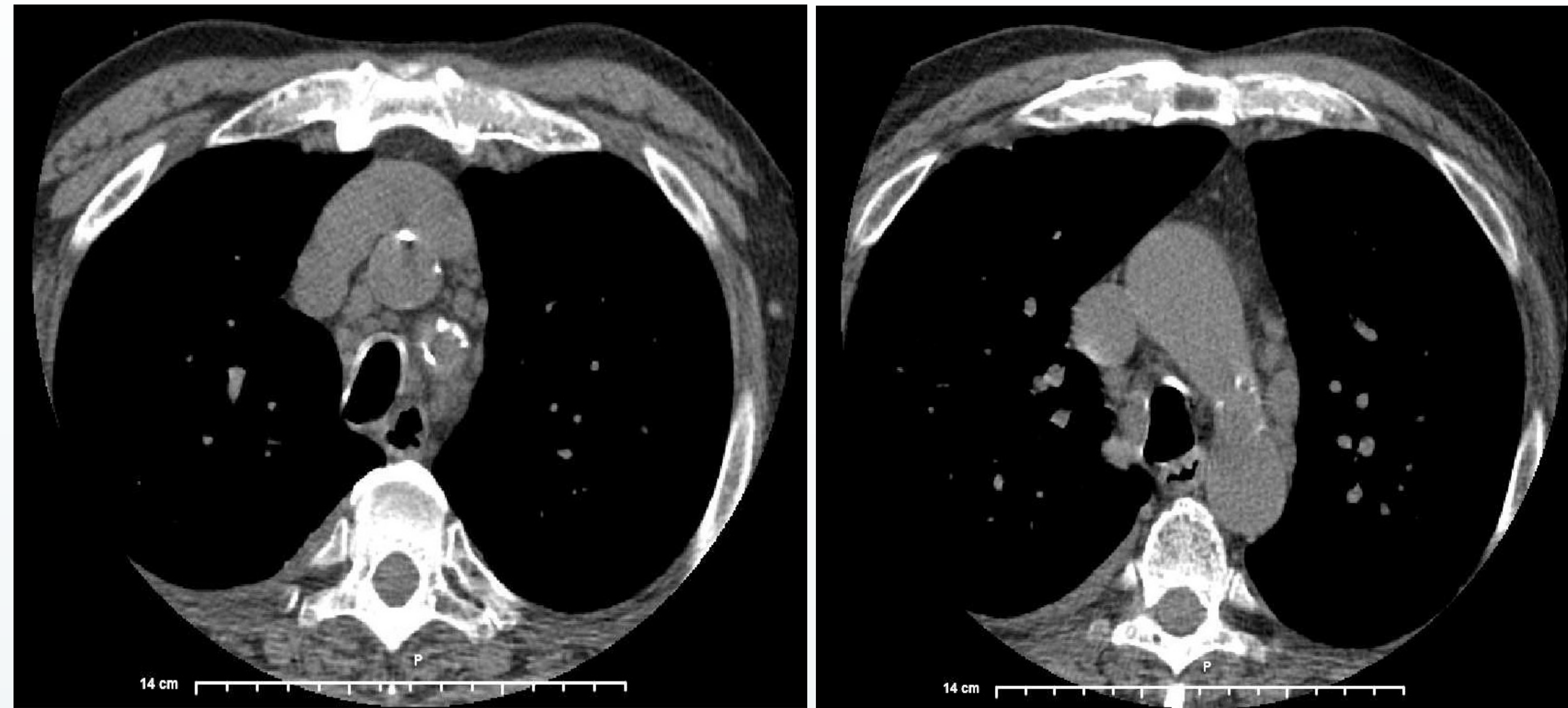
Patients with hyperthyroidism have increased risks of an array of cardiovascular problems. Thyroid disease are common with cardiac disease patient, reaching 11%. Thyroid dysfunction affects cardiovascular physiology by different means, including myocardial inotropy, heart rate, cardiac output and peripheral arteries reactivity. Coronary artery calcium (CAC) on computed tomography (CT) is a well validated measure of subclinical atherosclerosis. It has been shown to be useful way of improving cardiovascular risk assessment in asymptomatic individuals with risk factors for atherosclerotic cardiovascular disease (ASCVD). It serves as a guide for initiating or deferring preventive therapies.

Hereby, we describe the case of a patient presented with overt hyperthyroidism with substernal goiter and high risk for ASCVD (above 20%) but with normal levels of LDL on which a coronary artery calcium score served as a predictive tool for risk stratification.

Patient Description

This is a case of a 61-year-old male with past medical history of arterial hypertension, and chronic obstructive pulmonary disease secondary to heavy smoking evaluated due to altered thyroid function tests (TFTs). Patient complained that over the last 2 months he had been dealing with: palpitations, tremors, heat intolerance, neck enlargement, fatigue and sweating. The physical exam was remarkable for tachycardia on auscultation, a palpable goiter, the presence of Pemberton’s sign and increased deep tendon reflexes. Thyroid ultrasound was ordered which revealed a diffuse goiter with possible extension to substernal area. Laboratory results with TFT’S consistent with an overt hyperthyroid state secondary to Grave’s disease. Patient was started on methimazole 30 mg daily in order to control hyperthyroidism. On laboratory patient evaluation noted with a normal LDL (46 mg/dl) and Non-HDL levels (38 mg/dl) but with High risk for ASCVD (> 20%). Despite having such high ASCVD risk patient is reluctant to start statin therapy.

Laboratory and Imaging results



TSH level	Free T4 level
< 0.008 ulu/ml	1.98 ng/dl
TSI: 80.5 IU/L	Total T3 uptake: 52%
LDL: 46 mg/dl	Non-HDL: 38 mg/dl



Pictures consent by patient

Clinical Course

Chest CT scan was ordered due to possible goiter with substernal extension and based on his reluctant to start statin therapy a coronary Calcium was order to look for subclinical ASCVD in the same imaging study. Substernal Goiter extension was confirmed on chest CT and coronary calcium score was reported elevated at 680 AU, leading to ASCVD risk of more than 30%.

Based on CAC score results, cardiology evaluation was recommended before total thyroidectomy surgery as treatment option. 2D-echocardiography was done revealing a Grade 2 diastolic dysfunction with severe left atrial enlargement and ejection fraction between 45-50%. Also mild to moderate aortic and mitral regurgitation with pulmonary hypertension (pulmonary artery pressure of 26 mmHg).

Case Outcomes

- CAC score helped the patient to better visualized his risk and understand the importance of starting evidence based high intensity statin for LDL lowering.
- As our patient with extensive CAC (> 400 AU), the likelihood of significant coronary artery stenosis is more than 90% reported on literature.
- Planning to perform Right and Left heart catheterization before decisions are made for final hyperthyroidism treatment due to suspected coronary artery disease.

Discussion

- CAC score has emerged as the single most predictive cardiovascular risk marker in asymptomatic individuals as in our patient with multiple risk factors normal LDL and Non-HDL levels.
- CAC score as a tool is accessible, non invasive and requires minimal patient preparation. It gives us a summary measure of atherosclerotic disease, reflecting the cumulative lifetime effect of both measurable and unmeasurable risk.
- Also CAC score help to guide our clinical decision and referred the patient for adequate cardiovascular evaluation before establishing definitive management regarding his hyperthyroidism state ,substernal large goiter and avoid postoperative complications.

References

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