

Coronary Calcium Newsletter

By: Roshanda R. Ruffin, 4th Year Pharmacy Student- Hampton University School of Pharmacy

Coronary artery disease (CAD) is the progressive build-up of atherosclerotic plaque that increases the probability of having a heart attack, and is the number one cause of death regardless of gender.¹ Atherosclerotic plaque has three components: macrophages at the center, underlying layers of cholesterol and a calcified base. Heart attacks are not always accompanied by precursors (e.g. chest pain, nausea) that allow time for preventive measures; sadly enough the first sign or symptom of a heart attack may be sudden death.¹ Due to the severe consequences of heart attacks, it is vital to take precautionary measures to reduce or modify risk factors that may lead to cardiovascular events. An important method of early prevention is screening for CAD.¹ There are several patient types that are at a higher risk for having calcified plaques in the arteries such as: those with a family history of heart disease, high cholesterol, high triglycerides, low HDL, high blood pressure, diabetes, overweight, inactive lifestyle, women over 55 and men over 45.² Measuring the calcium deposits in the coronary arteries is one of the newest promising markers for CAD risk.¹

Plaque accumulations in the arteries may cause them to harden and close, preventing adequate blood flow. The arteriosclerotic plaque is composed of macrophages, cholesterol and calcium deposits. If this plaque ruptures, the result of the thrombosis can be a heart attack or stroke.¹ Calcium, an extremely important mineral in the body, is normally not present in the arteries; however when it is, evidence of calcium can be seen in X-rays. One method for measuring the calcium accumulation is

¹ (Quinn, 2004)

Coronary Calcium Newsletter

By: Roshanda R. Ruffin, 4th Year Pharmacy Student- Hampton University School of Pharmacy
an ultra fast or electron beam computerized tomography (CT), which rapidly analyses the heart for calcium deposits.¹

The few steps to image the heart for calcified deposits may be the answer to saving millions of lives. Calcium scoring is a measure to assess the amount of calcified plaque located in the coronary arteries of a person.² The measure of calcified plaque accumulated within the arteries is directly proportional with the likelihood of suffering from cardiac events such as heart attacks or strokes. In a recent study, results showed that patients without any prior cardiovascular events and receiving a calcium score of 100 have a ten times higher risk of having a heart attack or stroke.² Calcium scoring does not evaluate the individual blockage caused by the calcified deposits, but rather assesses the overall risk for heart disease.²

Cardiac calcium score is performed using a CT scanner that rotates to remit cross-sectional images of the various valves of the heart.² The calcified atherosclerotic plaques are detected from the scanner using a radioactive dye and are then evaluated and given a score.² The procedure entails the patient lying on his/her back on the CT table, while the table is positioned into a donut-shaped x-ray machine.² The x-ray machine rotates around the patient and captures roughly 64 cross-sectional images of the heart.² The procedure takes approximately 5 seconds. Following the procedure the calcium score is immediately given along with a consultation of the patient's risk.²

² (Cardiology Associates , 2006)

Coronary Calcium Newsletter

By: Roshanda R. Ruffin, 4th Year Pharmacy Student- Hampton University School of Pharmacy

Coronary calcium scoring predicts the progression of heart disease by assigning a score that corresponds to the amount of plaque present. A calcium score of zero represents no plaque, a < 5% risk of current heart disease and very low risk of heart attack.² A calcium score of 1-10 signifies minimal plaque, a < 10% risk of current heart disease, and a low risk for heart attack.² At this stage the patient should consider improving diet, exercising regularly, and smoking cessation for smokers. A calcium score of 11-100 represents mild plaque, a risk for mild coronary disease and moderate risk for heart attack.² At this point the patient should take a daily aspirin supplement, while continuing diet and exercise, and smoking cessation for smokers. As the score increases to 101-400 range, there is a moderate accumulation of plaque and the intensity of heart disease increases to non-obstructive, with a moderately high risk for heart attack.² The patient should continue the aforementioned regimens as well as undergoing a physician ordered stress test. Any calcium score > 400 constitutes extensive plaque.² At this point more than 90% plaque blocks at least one of the coronary arteries and the risk for heart attack is high. The patient should perform a stress test for further evaluation and continue the daily aspirin prophylactic therapy as well as life style changes.

Overall the calcium scoring offers a wide array of benefits for prevention and monitoring of cardiovascular risk that may ultimately decrease all cause morbidity and mortality. Coronary calcium testing is currently under investigation and has not proven to be advantageous over other testing methods. However it is a very beneficial as a diagnostic tool, as it offers a preventative measure for decreasing cardiovascular disease.

Student: Roshanda R Ruffin
Preceptor: Dr. Carl Tullio, Pfizer MOS

Coronary Calcium Newsletter

By: Roshanda R. Ruffin, 4th Year Pharmacy Student- Hampton University School of Pharmacy

Bibliography

1. Cardiology Associates . (2006). *What is Cardiac Calcium Scoring*. Retrieved June 28, 2011, from Cardiology Associates: www.cardassoc.com/news/WhatIsCardiacCalciumScoring.pdf
2. Quinn, R. (2004). *Underwriting Coronary Calcium*. New York: Th Legal & General America Companies: Banner Life.