



https://youtu.be/x33R_aZeB50

Calcified arteries- what is the significance?

Calcium deposition in arteries shows how much fatty build-up or plaque formation. Plaques, especially in your coronary arteries, are the leading cause of heart attacks, and when a piece of these plaques breaks off, a blood clot can form around it, blocking the flow of blood, and the heart muscles will be deprived of oxygen.

Coronary artery calcification is a buildup of calcium that can predict your cardiovascular risk, as all plaques get calcified with time.

Cardiologist depends on ECG tracings during exercise on a treadmill machine to check on the degree of blockage of coronary vessels, shown by the ST segment changes.

The presence of calcified plaques is visible on CT scans, and the number of such spots can be counted and given as a coronary calcium score.

This is referred to as the calcium score, which measures the amount of calcium in your coronary arteries. It doesn't tell us how much the artery is blocked or detect where blockages might occur. Your calcium heart score also doesn't indicate your absolute heart attack risk.

How do plaques start?

It starts with inflammation in the inner lining, forming fatty streaks.

White blood cells, red blood cells and macrophages get collected at the site. Cholesterol also gets collected like pebbles on the banks of a river. Calcifying these lipid-rich plaques then solidifies these heaped-up areas to form solid plaques.

Then there are the non-calcified plaques that can rupture and release a blood clot to form a thrombus. This blocks the arteries and leads to cardiac muscle damage called infarction.

Calcification occurs within the arteries, also called medial calcification. This causes arterial stiffness, which increases the risk of adverse cardiovascular events, including high blood pressure.

The right and left coronary arteries are the first branches of the aorta, the main artery in your body. These two main arteries are the units that supply all parts of the heart muscle with blood.

These main arteries and their branches can get clogged up with calcified plaques.

Calcification in the arteries occurs on the inner lining, which is common in coronary arteries, and such calcification occurs in the smooth muscle layer in the more significant arteries.

The amount of calcification in the coronary arteries indicates how bad your atherosclerosis may be. Atherosclerosis results from plaque collecting in your arteries, making them narrow. This makes it difficult for blood to get through your arteries.

If you have coronary artery disease, invariably, the vessels are calcified.

In people older than 70, more than 90% of men and 67% of women have coronary artery calcification. Before menopause, estrogen protects women from developing atherosclerosis.

Women tend to develop atherosclerosis 10 to 15 years later than men.

People who are white are more likely than other races to have coronary artery calcification.

You're more likely to get coronary artery calcification if you have the following:

Chronic kidney disease.

Glucose issues such as diabetes mellitus.

Too much bad cholesterol (low-density lipoprotein or LDL) and too little good cholesterol (high-density lipoprotein or HDL).

High BMI (body mass index).

Family history of coronary artery calcification.

High blood pressure.

A history of cigarette smoking or using other tobacco products.

Older age.

Parathyroid hormone irregularities.

High phosphate levels.

High calcium level.

When the calcification of the coronary arteries is extensive, interventional cardiologists find it challenging to expand the vessels during the percutaneous coronary intervention, PCI, or angioplasty. It makes it harder to develop a stent to keep your artery open.

Calcium deposits start small (.5µm or micron/micrometre) and grow larger than 3mm, with plaque continuing to accumulate simultaneously.

Now how can we diagnose that you have coronary artery calcification?

A type of imaging called computed tomography or multidetector computed tomography (MDCT) can find coronary atherosclerosis before it becomes advanced.

A cardiac CT (computed tomography) scan can show calcified plaque deposits in your coronary arteries. This is called the coronary artery calcium (CAC) test, which looks at the following:

How many plaques do you have?

How dense the plaques are.

How large they are.

Your healthcare provider will multiply your calcification area by density to get an Agatston score. You get a score of 0 to 400 or more, with higher scores indicating a more significant risk of a heart attack or stroke in 10 years.

Coronary artery calcification scores

A score of 0 shows no disease.

From 1 to 99 indicates mild disease.

From 100 to 399 shows moderate disease.

More than 400 show severe disease.

So, how can you reduce the incidence of coronary artery calcification and plaque formation?

If you have coronary artery calcification, you're at a high risk of developing coronary artery disease and major adverse cardiovascular events (MACE).

Such changes occur in

Diabetes mellitus.

Abnormal cholesterol levels.

High blood pressure.

Kidney disease.

Control your diabetes with medication, a low glycemic diet and daily exercise.

Avoid overeating with foods containing saturated fat and trans fat.

Check your blood pressure frequently and keep the upper pressure at 125mm hg.

Kidney disease is most common in uncontrolled diabetes. Controlling your diabetes will slow down the disease.

Walking daily over 30,000 steps intermittently is the solution for all diseases- my personal experience.

Calcium score studies emphasise the importance of patients knowing their risk for heart disease. It predicts whether you are at low risk, high risk or in between for a heart attack.

Whenever there is calcium in the heart arteries, there is cholesterol plaque buildup — the calcium is at the crime scene, but it is not the culprit. But, since we can see calcium on simple CT scans of the heart, we can use this trick to learn more about the number of cholesterol deposits.

We can use cardiac calcium scoring to detect cholesterol deposits before they become a problem and help patients avoid heart attacks.

So, viewers, do not neglect your good habits and take every precaution to stay healthy when you are 60 and over. I am 93, I have done it all, and a success story.

Stay safe, and goodbye for now.