**CORONARY ARTERY CALCIUM SCORING CT SCAN**

For nearly 30% of Americans, the first symptom of coronary heart disease (CHD) is a heart attack. Unfortunately, some of the most common methods for detecting coronary heart disease are not designed to identify atherosclerotic plaque, one of the most predictive signs of the disease.

The most widely used method of predicting whether a patient has heart disease is the Framingham Risk Score (FRS) assessment. However, the FRS is limited in its value because it assesses only known risk factors, not atherosclerotic plaque. Stress testing cannot sufficiently detect heart disease in patients with no symptoms of heart disease.

The Coronary Artery Calcium Scoring (CACS) CT scan is a test designed to detect heart disease by imaging the coronary arteries for the accumulation of calcified plaque, a byproduct of cholesterol. CACS is a highly reliable test for the risk of heart attack. The American Heart Association has given the CACS a level I recommendation for patients who have an intermediate risk for heart disease.

**What The Score Means**

A patient's calcium score corresponds to a level of plaque:

- 0: No evidence of plaque
- 1 - 100: Mild amount of plaque
- 101 - 400: Moderate amount of plaque
- Over 400: Extensive amount of plaque

A score of zero suggests that there is no calcification within the coronary arteries, and that the chance of having a heart attack over the next 5 years is very low. All other scores mean that coronary artery disease is present in some degree. The higher the score, the more likely it is that the patient could suffer a heart attack or death in the coming years.

**What Should You Do If A Patient Has A Score of More Than 400?**

We believe that a patient with a score of 400 or more needs a cardiology consult because of the increased likelihood of coronary artery disease and heart attack.

**To Whom Should You Recommend A Coronary Artery Calcium Scoring CT Scan?**

Appropriate candidates for a CACS CT scan are men over 35 and women over 45 who have one or more of the risk factors below:

- Age
- Male gender
- Family history of heart disease
- High LDL-cholesterol levels
- High blood pressure
- Obesity
- Physical inactivity
- Are smokers

**How Frequently Should Patients Have The Test?**

Age, past medical history and other factors should be taken into consideration, but most studies agree that a CACS scan is generally necessary no sooner than every 2 to 3 years.

**Conclusion**

These data show that a CACS can modify predicted risk obtained from FRS alone, especially among patients in the intermediate-risk category in whom clinical decision-making is most uncertain.

**The Patient Experience**

The test is non-invasive, painless and typically takes less than half an hour to perform. Patients will be asked to remove all metal objects from their torso, neck and head.

**Research**

Although the Framingham Risk Score (FRS) is often recommended for all adults in order to guide preventive treatment, research shows that FRS combined with the CACS assessment provides better prognostic information than either alone.

**Methodology**

Prospective observational population-based study of 1,461 asymptomatic adults with coronary risk factors.

- Participants with at least 1 coronary risk factor (45 or more) underwent CT examination, were contacted yearly for up to 8 years, and were assessed for CHD.
- This analysis included 1,312 participants with CACS results; excluded were 268 participants with diabetes and 14 with either missing data or who had a coronary event before CACS was performed.

**Main outcome measures:** Nonfatal myocardial infarction (MI) or CHD death.

**Main results:**

- During a median of 7.0 years of follow-up, 94 patients experienced MI or CHD death; 70 patients died of any cause.
- Compared with an FRS of zero, a CACS of more than 300 was predictive of risk among asymptomatic adults with coronary risk factors.
- Compared with an FRS of less than 10%, an FRS of more than 30% predicted the risk of MI or CHD death (hazard ratio [HR], 14.3; 95% confidence interval [CI], 2.0-104; P = .003).
- Compared with an FRS of zero, a CACS of more than 300 was predictive of risk among patients with an FRS higher than 10% (P = .001) but not with an FRS less than 10%.

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