Power of zero coronary artery calcium

In India, the burden of communicable diseases is decreasing slowly where as noncommunicable diseases is rising rapidly.CAD(coronary artery disease) occurs 5-10 years earlier in Indians compared to other world populations. The burden of CAD is increasing in developing countries due to changing lifestyles. In many individuals initial presentation is either myocardial infarction or sudden death. There is a urgent need for preventive strategy.

Traditional cardiovascular risk stratification methods lack the sensitivity or specificity to estimate risk in asymptomatic individuals and cannot predict all future cardiovascular events. Exercise stress test are cost effective but lack required sensitivity. CT coronary artery calcium scoring(CACS) is increasingly being accepted as a screening test for cardiovascular disease due to its noninvasiveness and predictive value of future adverse events[1,2].

CACS can be performed on multislice CT scanner within few minutes. It quantifies the amount of coronary calcium noninvasively. Amount of coronary calcium can be quantified by various methods like the Agatston ,volume and mass score. The effective radiation dose for CACS averages around 2 msv.

CACS can be used for risk stratification and higher score indicates increased risk. A zero CACS is associated with very low risk of cardiovascular events within 5 years[3]. Rising scores signify increasing risks for coronary heart disease and the need for further evaluation and aggressive treatment. Coronary calcium score is a independent risk factor for coronary heart disease. CACS quantifies the total atherosclerotic burden. Coronary artery calcium has predictive value independent of traditional risk factors[4,5].

Detection of individuals with subclinical atherosclerosis by means of CACS helps in identifying high risk individuals and prevent adverse cardiovascular events. There is a direct relationship between CAC(coronary artery calcium)measured at CT and histologically measured plaque burden.There is a potential to misclassify the long term risk for CAD by risk assessment tools as framingham risk score. Simple screening procedure as CACS enhances the ability to predict risk in target population[6]. Absence of CAC is associated with a very low risk of future CAD. In individuals having zero CACS, further evaluation and medications can be avoided.AHA(american heart association) recommends screening individuals having intermediate risks for heart disease.AHA does not recommend CACS in low or high risk individuals for heart disease[7]. CT is a reliable method for identifying arterial calcification. CACS gives a close approximation of total atherosclerotic burden.

The potential benefits of CACS must be weighted against the risk of exposure to ionizing radiation. High CACS is associated with a significant risk of further cardiovascular disease events and zero CAC indicates a very low risk for further cardiovascular events. ''Zero'' CAC score is powerful negative risk factor for near term development of coronary event. Zero CACS among asymptomatic patients allows clinicians to prescribe less costly medications and initiate lifestyle modification[8].

It may be reasonable to consider use of CACS in asymptomatic individuals who are of intermediate risk. High risk individuals do not need screening .CACS may also be used in low risk patients with a family history of premature heart disease. Zero CAC serves a ''gatekeeper'' proir to investigations requiring CT coronary angiography, single photon emission tomography and invasive arteriography in low to intermediate risk populations[9].

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