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Addition of biomarker high sensitivity troponin I (hSTROPI) to QRISK3 score in predicting significant coronary artery disease (CAD)

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Background: The current models to predict CAD in general population is not universally accepted. Many risk scores do not take into account factors such as south Asian ancestry, type 2 diabetes mellitus or family history of premature CAD. There is still no clarity on the position of biomarkers in addition to traditional risk factors.

Purpose: This study evaluates the role of biomarker hSTROPI in addition to QRISK3 score in predicting significant CAD.

Methods: This observational study included 103 consecutive subjects who had non cardiac pain as per ESC criteria and wanted to assess their future cardiovascular risk and to know the coronary anatomy. None had documented CAD prior. The inclusion criteria consisted of subjects who were >18 years of age asymptomatic or with non-cardiac chest pain and absence of clinical cardiovascular disease. Exclusion criteria were heart failure, chronic kidney disease (CKD) and anemia (hemoglobin <10 gms%). They underwent risk stratification based on QRISK3 score and measurement of hSTROPI. All of them underwent Computerized Tomography coronary angiogram (CTCA). Subjects with more than 50% lesions on CT coronary angiogram were deemed to have significant CAD. We analyzed the impact of hSTROPI in addition to QRISK3 score in picking up significant lesions by CTCA.

Results: The analysis showed sensitivity of QRISK3 >17.5% of 46.43%, specificity of 75.68%, positive predictive value (PPV) of 41.94%, negative predictive value (NPV) of 78.87% and diagnostic accuracy of 67.65%.
hSTROP I >3.5pg/ml showed a sensitivity of 37.93%, specificity of 81.08%, PPV of 44%, NPV of 76.92% and diagnostic accuracy of 68.93%.
When both hSTROPI >3.5pg/ml and QRISK3 >17.5% are combined, the sensitivity was found to be 27.59%, specificity of 91.89%, PPV of 57.14%, NPV of 76.4% and diagnostic accuracy of 73.79%.
In the study population, significant CAD was found in QRISK3 >17.5% in 41.9% and QRISK3<17.5% in 22.2% and (p=0.04).
Significant CAD was found in 44% of population with HSTROPI >3.5 pg/ml and in 23.1% whose HSTROP I <3.5pg/ml (p=0.04).
Significant CAD was found in 57.1% of population with both parameters positive (QRISK3 >17.5% and hSTROPI >3.5 pgm/ml), 23.6% of the population in which both parameters were negative (p=0.009).

Conclusion: Combining QRISK3 score of more than 17.5% and hSTROP I more than 3.5pg/ml have significant association with more than 50% lesion by CTCA with a specificity of 91.89%.
This may be useful in counselling intermediate risk group patients to have aggressive pharmacological primary preventive strategies like high dose statins. This may be a cost effective method of screening south Asian population who have much more risk factors and CAD at much younger age.