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Chest pain in primary care: Predicting coronary artery disease

Sinead Wang(1), J Yap(2), A Ang(1), SW Quah(1), CS Sin Lee(1), CW Ooi(1), LF Fang Teo(1), LF Low(1), S Barbier(3), P Goh(1), T Chua(2), NC Chuan Tan(1)

(1) SingHealth Polyclinics, Family Medicine, Singapore

(2) National Heart Centre, Cardiology, Singapore

(3) Agency for Science, Technology and Research, Statistics, Singapore

Corresponding author: Dr Sinead Wang, SingHealth Polyclinic, Family Medicine, SINGAPORE, Singapore. E-mail: sinead.wang.zhen@singhealth.com.sg

Background & Aim: Chest pain is common amongst primary care patients. The family physician is often tasked with the initial evaluation to exclude coronary artery disease (CAD). Prediction tools have mostly been derived in Western cohorts. We aimed to identify predictors of coronary artery disease and to validate existing risk models (the Duke Clinical Score, CAD consortium score, the Marburg Heart Score) in our Asian primary care cohort.

Method: This is a prospective study of consecutive patients from a network of 9 primary care centers referred to a single tertiary unit for outpatient evaluation of chest pain from Jul 2013 to Sep 2015. Patients with existing CAD or aged below 30yrs were excluded. Demographic and clinical determinants were obtained using interviewer-administered questionnaires and from the clinical consult. Significant coronary artery disease was defined as $\geq 50\%$ stenosis on coronary angiography (computed tomography or actual) or a positive functional test with confirmatory clinical correlation by a cardiologist.

Results: A total of 507 (249 male, 55.9 ± 11.1 age, 416 Chinese, 35 Malay, 45 Indian) patients were included analysis. Fifty-seven (11.2%) patients had CAD. On multivariate analysis, male (RR 4.20, 95% CI 1.93-9.12, $p < 0.001$), diabetes mellitus (RR 2.22, 95% CI 1.07-4.61, $p = 0.032$), typical chest pain (RR 4.14, 95% CI 1.65-10.43, $p = 0.003$), pathological Q waves (RR 3.52, 95% CI 1.60-7.78, $p = 0.002$) and ST changes (RR 2.85, 95% CI 1.21-6.71, $p = 0.016$) on ECG were significant predictors of CAD. The C-statistic for the Duke Clinical Score, CAD consortium score and the Marburg Heart Score were 0.782 (95% CI 0.720-0.843), 0.769 (95% CI 0.705-0.832) and 0.668 (95% CI 0.587-0.750) respectively.

Conclusion: In our Asian primary care cohort presenting with chest pain, male, diabetes mellitus, typical chest pain, Q waves and ST changes were significant predictors of CAD. The Duke Clinical Score and CAD consortium score performed well in our cohort.