

A simple score for estimating ischemic heart disease in patients with non-traumatic chest pain in primary care

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Background: Modelling epidemiological knowledge in validated clinical scores is a practical mean of integrating EBM to usual care. Existing scores about cardiovascular disease have been largely developed in emergency settings, but few in primary care. Such a tool is needed for general practitioners (GP) to evaluate the probability of ischemic heart disease (IHD) in patients with non-traumatic chest pain.

Objective: To develop a predictive model to use as a clinical score for detecting IHD in patients with non-traumatic chest-pain in primary care.

Methods: A post-hoc secondary analysis on data from an observational study including 672 patients with chest pain of which 85 had IHD diagnosed by their GP during the year following their inclusion. Best subset method was used to select 8 predictive variables from univariate analysis and fitted in a multivariate logistic regression model to define the score. Reliability of the model was assessed using split-group method.

Results: Significant predictors were: age (0-3 points), gender (1 point), having at least one cardiovascular risks factor (hypertension, dyslipidemia, diabetes, smoking, family history of CVD; 3 points), personal history of cardiovascular disease (1 point), duration of chest pain from 1 to 60 minutes (2 points), substernal chest pain (1 point), pain increasing with exertion (1 point) and absence of tenderness at palpation (1 point). Area under the ROC curve for the score was of 0.95 (IC95% 0.93;0.97). Patients were categorised in three groups, low risk of IHD (score under 6; n=360), moderate risk of IHD (score from 6 to 8; n=187) and high risk of IHD (score from 9-13; n=125). Prevalence of IHD in each group was respectively of 0%, 6.7%, 58.5%. Reliability of the model seems satisfactory as the model developed from the derivation set predicted perfectly ($p=0.948$) the number of patients in each group in the validation set.

Conclusion: This clinical score based only on history and physical exams can be an important tool in the practice of the general physician for the prediction of ischemic heart disease in patients complaining of chest pain. The score below 6 points (in more than half of our population) can avoid demanding complementary exams for selected patients (ECG, laboratory tests) because of the very low risk of IHD. Score above 6 points needs investigation to detect or rule out IHD. Further external validation is required in ambulatory settings.