The CHA_2DS_2-VASc score predict cardiovascular disease events in high-risk individuals

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Background: stratifying risk for cardiovascular diseases remains challenging. Assessing patients' cardiovascular risk may be used for the targeting of preventive treatments of asymptomatic individuals, but with sufficiently high risk for the development of cardiovascular disease.

A clinical risk scoring was determined using the CHA_2DS_2-VASc e score. The area under the receiver operating characteristic curve, ROC curve, (AUC) was used to evaluate the significance of markers as predictors. In particular, two models have been compared, in Model 1 the CHA_2DS_2-VASc score was evaluated and in Model 2 the presence of asymptomatic internal carotid artery stenosis was added to the CHA_2DS_2-VASc score.

Methods: in a longitudinal community-based cohort study from Aosta Valley, Italy, 2541 individuals with high-risk for cardiovascular diseases were screened by GPs by means of a cerebrovascular risk card (CVRC). 1172 individuals, with CVRC score >1000 were evaluated in a one-day out-patient clinic from 2004 to 2009. Cardiovascular events data were collected and analysed. A clinical risk scoring was determined using the CHA_2DS_2-VASc score. The area under the receiver operating characteristic curve, ROC curve, (AUC) was used to evaluate the significance of markers as predictors.

Results- During follow-up of 70.8 months a major adverse cardiovascular and/or cerebrovascular events (i.e. death, myocardial infarction, or stroke) occurred in 185/1144 individuals. Cox proportional-hazards models adjusting for conventional risk factors identified asymptomatic internal carotid artery stenosis ≥ 50% and CHA_2DS_2-VASc ≥4 as independent predictors of outcome.

The corresponding AUCs were 0.601 and 0.634 in Model 1 and 2, respectively, with a statistically significant difference (p-value< 0.039).

The absolute Integrated Discrimination Improvement (IDI) was 0.0131 (p-value=0.0015), and the relative IDI was 0.4932. The net benefit (NET) becomes significant from a predicted probability ≥10%; it was 0.041 in Model 1 and 0.050 in Model 2.

Conclusions- A CHA_2DS_2-VASc ≥ 4 or an asymptomatic carotid artery stenosis of ≥ 50% or greater are predictors of a cardiovascular event. Risk assessment in high risk patient is improved by data on asymptomatic internal carotid artery stenosis, with respect to the CHA_2DS_2-VASc score alone.