Ruling out coronary heart disease in primary care: external validation of a clinical prediction rule

Haasenritter et al performed an external validation of the Marburg Heart Score (MHS), a clinical prediction rule to rule out coronary heart disease (CHD) in patients presenting with chest pain in primary care. We read this potentially important article with great interest because ruling out CHD in primary care is of special concern. The authors concluded that, according to its generalisability, ease of application, and accuracy, its use in clinical practice is recommended.

However, we have some doubts about their outcome measure and conclusion. The outcome measure, the reference diagnosis, was established using a delayed-type reference standard and an expert panel. Our main concern was that this expert panel was not blinded to the results of the index test. The authors acknowledged this problem, but stated that blinding of this panel would have led to fewer available data for this study. In addition, another study showed a ‘substantial and satisfying’ agreement (kappa = 0.62) between a blinded and unblinded panel. We think that having used two independent experts without knowledge of the MHS, blinding without loss of data would have been possible without risk of bias. Furthermore, the reported agreement was derived from another study, and is therefore not generalisable to this study. We would be inclined to rate a kappa of 0.62 at best as moderate rather than ‘substantial and satisfying’.

The authors report an impressive negative predictive value of 97.9%. Nevertheless, still one in 50 patients with CHD would have been missed using the MHS. Moreover, four of 21 patients with acute coronary syndrome (ACS) were falsely classified as ‘CHD-negative’. In our opinion, missing four out of 21 with acute coronary syndrome (ACS) may be too high and they state explicitly that missing four out of 21 with acute coronary syndrome (ACS) is too high. Regarding the accuracy of the MHS, Djasmo et al state implicitly that missing one in 50 patients with CHD may be too high and they state explicitly that missing four out of 21 with acute coronary syndrome (ACS) is too high. Regarding the first point we suppose that the predictive values present the most informative measures from a clinical point of view since they account for the prevalence of the target disease in the respective setting. Increasing the sensitivity would substantially decrease the positive predictive value, especially in a low prevalence setting. However, we must state that the accuracy of the MHS regarding the diagnostic outcome, ACS is lower than in regards to the outcome myocardial ischaemia. We also agree that this fact deserves more attention. Diagnosis of ACS remains a major challenge in primary care since patients often present in an early stage and specific tests (for example, biomarkers) lack sensitivity. Therefore, we have some doubts about their outcome measure and conclusion. The outcome measure, the reference diagnosis, was established using a delayed-type reference standard and an expert panel. Our main concern was that this expert panel was not blinded to the results of the index test. The authors acknowledged this problem, but stated that blinding of this panel would have led to fewer available data for this study. In addition, another study showed a ‘substantial and satisfying’ agreement (kappa = 0.62) between a blinded and unblinded panel. We think that having used two independent experts without knowledge of the MHS, blinding without loss of data would have been possible without risk of bias. Furthermore, the reported agreement was derived from another study, and is therefore not generalisable to this study. We would be inclined to rate a kappa of 0.62 at best as moderate rather than ‘substantial and satisfying’.

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