CRIB Cardiovascular Research Institute Basel

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Combination of high-sensitivity cardiac troponin and B-Type natriuretic peptide for diagnosis and risk-stratification of syncope

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Background

While high-sensitivity cardiac troponin (hs-cTn) and B-Type natriuretic peptide (BNP) have been assessed separately for the diagnosis and risk-stratification of patients with syncope, their combined accuracy is unknown.

Methods

We assessed the diagnostic and prognostic accuracy of the combination of hs-cTnI and BNP in a prospective international multicenter study enrolling patients 40 years and older presenting with syncope to the emergency department (ED). Hs-cTnI (Architect) and BNP (Architect) concentrations were measured in a blinded fashion. Cardiac syncope, as adjudicated by two independent physicians using all available clinical information including one year follow-up, was the diagnostic endpoint. Death and MACE were the prognostic endpoints. Patients were classified in three risk groups (low (<10%), medium (10-30%), high (>30%)) for cardiac syncope based on hs-cTnI and BNP levels.

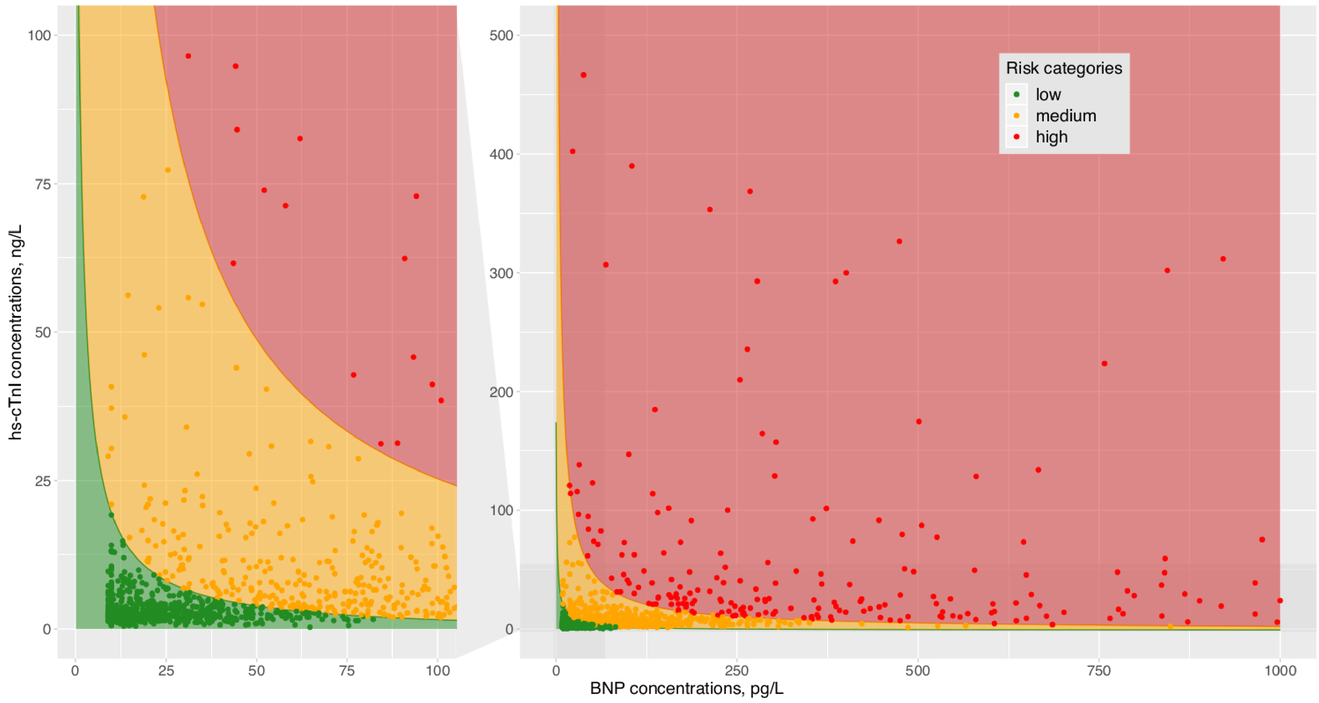

Figure: Visual tool to determine risk categories for cardiac syncope based on hs-cTnI and BNP concentrations.

Results

Among 1533 patients, cardiac syncope was the adjudicated final diagnosis in 233 (15.2%). Hs-cTnI and BNP concentrations both remained independent predictors of cardiac syncope in multivariable models. The diagnostic accuracy of the combination hs-cTnI/BNP for cardiac syncope was good with an area under the curve (AUC) of 0.81 (95%-CI 0.78-0.84) and significantly better than each biomarker separately or a set of clinical variables (each p<0.001). The classification of patients in three risk groups, depending on the probability for cardiac syncope based on their hs-cTnI and BNP values, translated well in predictions for MACE (AUC 0.79, 95%-CI 0.77-0.82) and death (AUC 0.78, 95%-CI 0.74-0.82) at 2 years follow-up. Based on these results, we designed a visual tool allowing convenient patient-specific diagnostic and prognostic risk evaluation based solely on hs-cTnI and BNP concentrations (Figure).

Conclusion

The combination hs-cTnI/BNP may have clinical utility in patients presenting to the ED with syncope as it allows good diagnostic as well as prognostic discrimination.

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