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External validation of the European cardiac magnetic resonance risk stratification in the Amsterdam UMC PAH patient cohort

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Introduction

The 2022 European pulmonary hypertension (PH) guidelines incorporate cardiac magnetic resonance (CMR) imaging metrics in the risk stratification of pulmonary arterial hypertension (PAH) patients. Thresholds to identify patients at estimated 1-year mortality risks of <5%, 5–20% and >20% are introduced. However, these cut-off values require external validation.

Methods

We analyzed data from incident, treatment naïve PAH patients from the Amsterdam University Medical Centres, VUmc, the Netherlands. The discriminative properties of the proposed CMR three risk stratum was tested at baseline and first reassessment, using the following PH guideline variables: right ventricular ejection fraction (RVEF), indexed right ventricular end systolic volume (RVESVi) and indexed left ventricular stroke volume (SVi).

Results

258 PAH patients diagnosed between 2000 and 2022 fulfilled the study criteria and included in the present study. Of these, 172 had a follow-up CMR. According to the CMR three risk stratum, most patients were classified at intermediate risk 45% (n=115) upon diagnosis. Only 11% (n=29) of PAH patients were classified at low risk and 44% (n=114) were classified as high risk and poor survival discrimination was seen between risk groups. Appropriate survival discrimination was seen at first reassessment.

Conclusion

Risk stratifying PAH patients with the recent proposed CMR cutoffs from the ESC/ERS 2022 PH guidelines requires adjustment as post-processing consensus is lacking and general applicability is limited. Risk assessment at follow up yielded better survival discrimination, emphasizing the importance of the individual treatment response.