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主題：

The application of AI in heart failure and functional cardiac image

摘要：

Patients with HF with reduced (HFrEF) or preserved ejection fraction (HFpEF) may present with diastolic dysfunction and demonstrate distinct clinical and morphometric characteristics yet manifesting impaired or preserved global systolic function defined by LVEF < 50 or $\geq 50\%$, respectively. EF as a percentage chamber-based measurement of the amount of blood pumped out of the heart during systole. By contrast, HFpEF cannot be determined alone clinically from the LVEF. The clinical judgement and diagnosis of HFpEF is not an easy task, as the diagnostic criteria need to follow the 2016 guidelines of the American College of Cardiologists and the American Heart Association, meanwhile also taking the diagnostic algorithm of the European Society of Cardiology from multiple diastolic properties and natriuretic peptide levels into account.

Herein, I presented the works relevant to an AI-based HFrEF and HFpEF algorithm capable of automatic recognition of abnormal mechanical features from a large scale HFrEF/HFpEF patient population with high diagnostic performance. The patients' full spectrum echocardiography images were extracted from the echocardiography files and randomly separated into the training, validation and internal testing dataset.



The model was further validated with an external testing dataset with the high AUCs. We concluded that the clinical application of such prescreening program may be implemented in clinical setting, with novel perspectives in identifying multiple dimensions from structural abnormalities with prognostic values.