磁共振成像

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心脏淀粉样变性（cardiac amyloidosis，CA）是一种罕见的心脏疾病，其主要特征是淀粉样胶原纤维在心肌细胞外间隙沉积，导致心肌功能异常。CA 的最常见类型分别为转甲状腺素相关淀粉样变性（cardiac transthyretin-related amyloidosis，ATTR-CA）和免疫球蛋白轻链淀粉样变性（cardiac light-chain amyloidosis，AL-CA）两种。这两种类型疾病的预后存在明显差异，AL-CA 患者的生存率较低，而 ATTR-CA 患者的预后相对较好，此外治疗方法也各不相同，因此，及早识别分型对于制订有效治疗方案至关重要。目前，临床上对 CA 的分型主要依赖于免疫组化、蛋白质组质谱以及闪烁成像等有创或有辐射的检查，存在需要心内膜活检以及费用较高等一定的局限性。因此，寻找一种新的无创方法来鉴别两种类型的 CA 显得尤为迫切。

近年来，心血管磁共振作为一种非侵入性成像技术，已被广泛应用于心脏疾病的诊断和评估中。磁共振心肌特征追踪技术（cardiovascular magnetic resonance-feature tracking，CMR-FT）是一种新兴的后处理技术，可以从多个维度对心肌应力进行定量分析，反映心肌细胞的收缩性，且无需使用对比剂。然而，针对 CMR-FT 在 CA 分型中作用的研究相对较少，尤其是在 AL-CA 和 ATTR-CA 的应力分析方面。

本研究利用 CMR-FT 技术对 ATTR-CA 和 AL-CA 进行心肌应力分析，并通过受试者工作特征（receiver operating characteristic，ROC）曲线评估应力参数对 CA 分型的价值。研究结果显示，ATTR-CA 组的应力参数显著低于 AL-CA 组，通过 ROC 曲线分析发现，多个应力参数对 CA 分型具有一定的准确性，特别是心外膜下全局纵向应力被发现是鉴别两种类型的独立因素。这些结果为早期识别和区分 AL-CA 和 ATTR-CA 患者提供了重要依据，对于改善 CA 患者的管理和预后具有积极的意义。详见内文第 23 页。

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About the cover

Cardiac amyloidosis (CA) is a rare heart condition characterized by the deposition of amyloid-like collagen fibers in the extracellular space of myocardial cells, leading to abnormal cardiac function. The most common types of CA are cardiac transthyretin-related amyloidosis (ATTR-CA) and cardiac light-chain amyloidosis (AL-CA). These two types exhibit significant differences in prognosis, with AL-CA patients having lower survival rates compared to those with ATTR-CA. Additionally, treatment methods vary between the two types, making early identification and classification crucial for effective treatment planning.

Currently, the clinical classification of CA relies primarily on invasive or radiation-based examinations such as immunohistochemistry, protein mass spectrometry, and scintigraphy. However, these methods have limitations, such as the need for endomyocardial biopsy and high costs. Therefore, there is an urgent need to find a new non-invasive method to distinguish between the two types of CA.

In recent years, cardiovascular magnetic resonance (CMR) imaging has been widely used as a non-invasive imaging technique for the diagnosis and assessment of heart disease. Cardiovascular magnetic resonance-feature tracking (CMR-FT) is an emerging post-processing technique that quantitatively analyzes myocardial strain from multiple dimensions, reflecting myocardium contractility, without the use of contrast agents. However, there is relatively limited research on the role of CMR-FT in the classification of CA, particularly in strain analysis for AL-CA and ATTR-CA.

This study utilized CMR-FT to analyze myocardial strain in ATTR-CA and AL-CA and evaluated the value of strain parameters for CA classification using Receiver operating characteristic (ROC) curves. The results showed that strain parameters in the ATTR-CA group were significantly lower than those in the AL-CA group. ROC curve analysis revealed that multiple strain parameters had a certain accuracy in CA classification, with subepicardial global longitudinal strain being identified as an independent factor for distinguishing between the two types. These findings provide important evidence for the early identification and differentiation of AL-CA and ATTR-CA patients, with positive implications for the management and prognosis of CA patients. Please see text page 23.

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