

## Compared Myocardial Deformation between Cardiovascular Magnetic Resonance and Cardiac Computed Tomography

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**Introduction:** In the fields of heart failure diagnosis, expect for the evaluation of heart valve abnormality, the myocardial wall motion is another important indication which has been concluded in many studies. Cardiovascular magnetic resonance (CMR) imaging provides highly reproducible data of myocardial deformation. Recently, the cardiac computed tomography (CT) imaging technique has become a new tool because of its advantages of good dynamic resolution, low cost and breath hold not required.

**Materials and Methods:** In this study, we analyzed the wall motion of heart by using Optical Flow Method (OFM), and compared the correlation between CMR and Cardiac CT imaging. The Cardiac CT scan was performed on the 64-slice DSCT scanner (Definition, Siemens Medical Systems, Forchheim, Germany) with a gantry rotation time of 330 ms. CMR was performed on a 3.0-T system (Achieva, Philips Medical Systems, Best, the Netherlands) using a 32-channel cardiac phased array receiver coil.

**Results:** According to the analysis results of Cardiac CT and CMR, the average wall motions between the diastole and systole phase in the left ventricle was  $2.15 \pm 0.47$  mm and  $2.21 \pm 0.46$  mm, respectively. The regression equation between the Cardiac CT and CMR was  $y = 0.06 + 1.00x$  with  $R^2 = 0.83$  and the correlation coefficient was 0.91, which means the data were highly positively correlated.

**Conclusion:** Using OFM motion estimate could accurately track myocardial deformation. The highly positive correlation between CMR and Cardiac CT images with OFM. Therefore, the Cardiac CT assessment myocardial motion may assist analysis in the diagnosis of heart failure.

**Key Words:** Myocardial Deformation, Cardiovascular magnetic resonance, Cardiac computed tomography, Optical Flow Method

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