RIGHT VENTRICULAR AFFECTION IN PATIENTS WITH ACUTE ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION: CARDIAC MAGNETIC RESONANCE FEATURE TRACKING STUDY

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Introduction

Right ventricular involvement in ST- segment elevation myocardial infarction (STEMI) patients can significantly influence their clinical outcomes, yet its impact is often under-recognized and its detection and its clinical implications are often underexplored.

Compared to other imaging modalities, cardiac magnetic resonance imaging (CMR) has the advantage of providing both functional assessment and tissue characterization in a single examination, all without the use of ionizing radiation.

Recently, CMR strain analysis has emerged as a more objective, quantitative tool for assessing both global and regional cardiac function. Unlike ejection fraction, which is influenced by loading conditions, strain analysis directly evaluates myocardial fiber deformation, offering a clearer and more accurate assessment of myocardial performance and health.

Aim of the work

The aim of this study was to assess the right ventricular affection in acute ST-segment elevation myocardial infarction (STEMI) patients using cardiovascular magnetic resonance imaging (CMR) derived myocardial feature-tracking (FT).

Patients and Methods

PATIENTS:

The study was carried on acute STEMI patients treated by primary percutaneous coronary intervention (PPCI) and examined by CMR.

METHODS:

All patients were subjected to:

•Full history taking including personal data: age at diagnosis of STEMI, detailed cardiovascular disease risk factor assessment, detailed history of chest pain, status of hemodynamic stability, detailed history about the PCI and any major post-procedural hemodynamic or electrical instability.

•Imaging investigations: Cardiac MRI was performed to all patients recently after PPCI. All patients were given intravenous Gadolinium at a dose of 0.3 ml per kilogram.

Results

The study included STEMI patients, most of them were males (57) while the females were only 11 subjects.

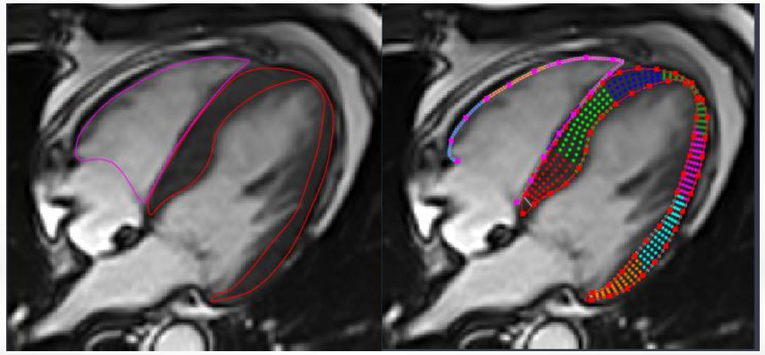

Figure (1): feature tracking analysis. Anatomical (left) and strain (right) images of the 4-chamber

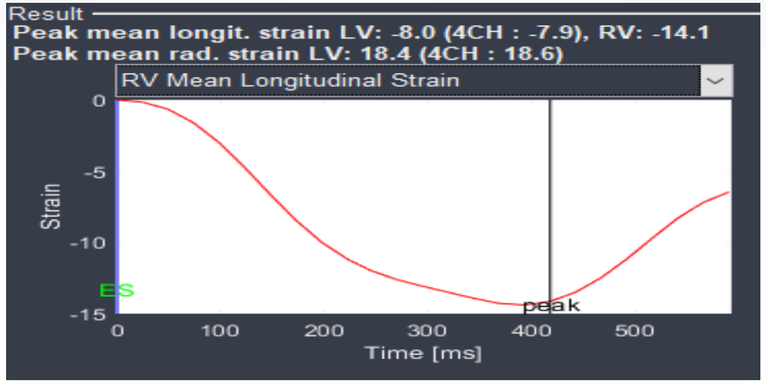

Figure (2): Graphical plotting of the global right ventricular longitudinal strain against time showing impaired values.

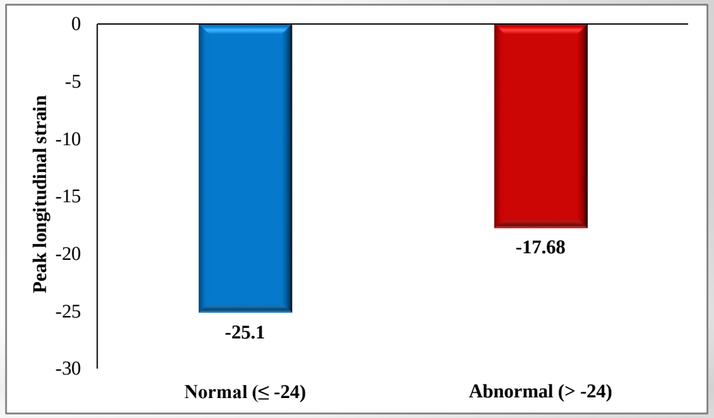

Figure 3: The right longitudinal strain among studied patients, Most of the patients had impaired RV-GLS at the baseline study (> -24%).

Conclusion

• Cardiovascular magnetic resonance imaging (CMR) derived myocardial feature-tracking (FT) is a useful tool for quantification of myocardial deformation.

• Right ventricular (RV) dysfunction was a prevalent issue in STEMI patients after the myocardial infarction, regardless their culprit artery.