

البحث الثاني بحث مقبول جماعي

عنوان البحث :

مقارنة بين تعقب نقاط انقباض القلب الطولية الكليّة و الجزئية بالموجات فوق الصوتية ثنائية و ثلاثية الابعاد لتقييم مدى تعقيد ST إصابة الشرايين التاجية للقلب لمرضى احتشاء القلب بدون ارتفاع قطاع

A Comparison Between Two-Dimensional and Three-Dimensional Regional and Global Longitudinal Strain Echocardiography to Evaluate Complex Coronary Lesions in Patients With Non- ST-Segment Elevation Acute Coronary Syndrome

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Introduction

A preliminary assessment of patients who suffer from severe and complex coronary artery lesions, such as three-vessel disease and/or a left main (LM) artery lesion, plays a critical contribution in determining prognosis and treatment plans for non-ST-segment elevation acute coronary syndrome (NSTE-ACS).

Therefore, a pre-angiography (i.e., before angiography) predictor was required to cost-effectively evaluate severe and complex coronary lesions to efficiently direct our subsequent dealing.

Aim

This study aimed to compare two-dimensional (2D) and three-dimensional (3D) global longitudinal strain (GLS) at the regional level to assess extremely complicated coronary lesions using the SYNTAX score as a standard of reference in 100 patients with NSTE-ACS.

Materials and methods

This research included 100 patients with non-ST-segment elevation acute coronary syndrome who presented at the Cardiology Department at Fayoum University from December 2019 to July 2020. All patients underwent a complete history and physical examination, hemoglobin A1c (HbA1c), lipid profile, creatinine assessment, 12-lead electrocardiogram (ECG), and transthoracic echocardiography (TTE) to detect global and regional longitudinal strain by 2D and 3D speckle-tracking echocardiography (STE). Coronary angiography was done on all patients within 24 hours of admission after acquiring echo images. Then, the results of 2D and 3D regional and global longitudinal strain (GLS) to predict the severity and coronary lesion complexity in terms of the SYNTAX score were compared.

Results

This study revealed that 2D GLS was -12.10 ± 3.51 , which is significantly higher than 3D GLS of -11.64 ± 4.05 ($p < 0.001$). The left anterior descending coronary artery (LAD) and left circumflex artery (LCX) territories revealed a significantly higher value using 2D regional longitudinal strain (-11.13 ± 4.47 and -12.54 ± 4.11 , respectively) than using 3D regional longitudinal strain (-10.84 ± 5.18 and -12.05 ± 4.29 , respectively) ($p = 0.017$ and $p < 0.001$, respectively). There were significantly lower 2D GLS, 3D GLS, global circumferential strain (GCS), area strain, and global radial strain (GRS) in the intermediate and high score group than in the low score group of patients ($p < 0.001$ for all).

Conclusion

2D and 3D strain echocardiography including GLS, GCS, GRS, and area strain are a noninvasive and rapid tool with clinical utility for evaluating coronary lesions in patients with NSTE-ACS. They can be routinely used to diagnose and stratify high-risk patients with NSTE-ACS, thereby potentially resulting in improved patient assessment. GLS as measured by 2D and 3D STE at minimal effort is a significant risk factor for patients with complex NSTE-ACS. In NSTE-ACS cases, the GLS absolute value is significantly associated with the degree of complexity of coronary artery lesions.

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