Evaluation of the left ventricular function using speckle tracking echocardiography in hemodialysis patients with preserved left ventricular ejection fraction

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Objective Patients with end-stage renal disease (ESRD) more frequently develop a wide range of left ventricular (LV) structural and functional abnormalities.

The aim of our study is to evaluate the left ventricular function using two-dimensional and three-dimensional speckle tracking echocardiography (STE) in ESRD patients with preserved left ventricular ejection fraction (PLVEF) undergoing haemodialysis (HD) treatment.

Methods Thirty patients on maintenance HD were examined before and after HD. All of the patients had normal left ventricular ejection fraction (50% or greater). Using the 2D-STE and 3D-STE methods, values belonging to the LV global longitudinal (GLS), circumferential (GCS) and radial (GRS) peak systolic strain were measured. BNP levels were measured before and after HD.

Results While the LVEF values in the ESRD group were found to be lower in 3D measurement than in 2D-echocardiography (58.46±7.14 vs. 61.36±7.87, P=0.03). LV global longitudinal and radial peak systolic strain were measured. BNP levels were measured before and after HD.

Conclusions In patients with ESRD, although the longitudinal and radial systolic functions are reduced, the LVEF may remain within normal limits due to the preservation of the circumferential functions. 2D-STE has the potential to detect the severity of uraemic cardiomyopathy in the early stages of the disease and might provide useful information for the risk stratification in ESRD patients with PLVEF.

The author hereby declares no conflict of interest

Longitudinal 2D strain can efficiently diagnose CAD and localize the culprit lesion in patients with suspected non-ST-elevation acute coronary syndrome and presumed normal systolic function

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Background the clinical work-up of patients presenting with chest pain is a diagnostic challenge. Conventional echocardiography is not informative in half of the cases. We investigated the diagnostic performance of global (GLS) and territorial (TLS) longitudinal strain to predict CAD in patients presenting with suspected non-ST-segment elevation acute coronary syndrome (NSTE-ACS) but presumed normal global and regional systolic function.

Methods 58 patients with suspected NSTE-ACS but normal LVEF (≥55%) and WMSI (=1) were prospectively enrolled.

Echocardiography (with speckle-tracking analyses) was performed on admission and all the patients underwent angiocoronarography. CAD was defined as the presence of stenosis of >50%.

Results CAD was present in 33 patients (57%). LVEF was 60.7±4.6% in group 1 (CAD) and 61.1±5.0% in group 2 (no CAD). Global longitudinal strain (GLS) was altered in group 1 (–16.7±3.4%) as compared to group 2 (–22.4±2.9%, p<0.001). GRS: 23.94 (9.2) vs. 30.41 (10.4%), p<0.001, GCS: –20.23 (3.4) vs. –21.46 (4.9%), p=0.1. The GCS was observed as an independent predictor related to the LVEF (beta=0.2, 95% CI: 0.126-0.207, p=0.015).

Conclusions Longitudinal 2D strain has a good diagnostic value in patients presenting with NSTE-ACS but normal global and regional systolic function.

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