Left ventricular global longitudinal strain as an indicator of myocardial injury in non-hospitalized COVID-19 survivors

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Introduction: The incidence of acute cardiac injury in COVID-19 patients is frequently subclinical and can be identified by cardiac magnetic resonance imaging. Left ventricular global longitudinal strain (LV-GLS) using two-dimensional speckle-tracking echocardiography (2D-STE) provides an accurate validated method for early detection of subclinical myocardial dysfunction. So far, long-term cardiovascular complications of COVID-19 are undetermined therefore several validated methods should be used for early diagnosis and intervention in those patients.

Purpose: The aim of this work was to describe GLS as an indicator of myocardial injury in a case series of non-hospitalized COVID-19 patients complaining of persistent dyspnea after resolution of COVID-19 infection.

Methods: A total number of 18 patients who were diagnosed with COVID-19 and were not indicated for hospital admission due to mild symptoms presenting with residual persistent dyspnea following COVID-19 infection resolution. Through clinical examination and standard 2D transthoracic echocardiography with STE emphasizing on LV-GLS was performed using Philips Epic - Qlab 10 software.

Results: The mean age of the included patients was 37.44±6.33 years, the mean time from COVID-19 diagnosis was 48.1±15.45 days, all patients (100%) had persistent dyspnea grade II. The mean left ventricular ejection fraction (LVEF) was 62.9±3.46% while the mean LV-GLS was –15.55±2.16%. Clinical and echocardiographic data is presented in Table 1.

Conclusion: In a case series of non-hospitalized COVID-19 survivors who complained of persistent dyspnea, GLS was low in comparison to the normally reported values of LV-GLS although they had normal LVEF indicating the persistence of myocardial injury even in mild cases of COVID-19 long after infection resolution. Further close follow-up of even mild and moderate COVID-19 survivors is certainly required to detect long-term cardiovascular sequelae. 2D STE with LV-GLS can be used as a readily available validated technique to detect early or persistent myocardial dysfunction succeeding COVID-19 infection.

Table 1: Clinical and Echocardiographic data (n= 18)

1. Clinical Data	
Male sex	10 (55.56%)
Age	37.44± 6.33 years
Time from COVID diagnosis	48.1±15.45 days
Dyspnea II	18 (100%)
2. Echocardiographic Data	
LVIDd	46.94±6.56 mm
LVIDs	25.67±5.93 mm
EDV	111.56±12.94 ml
ESV	41.22±5.08 ml
LVEF	62.9±3.46%
GLS	-15.55±2.16%

Results are shown in % and numbers of patients