

Myocardial Strain Analysis in Uncomplicated COVID-19 Survivor

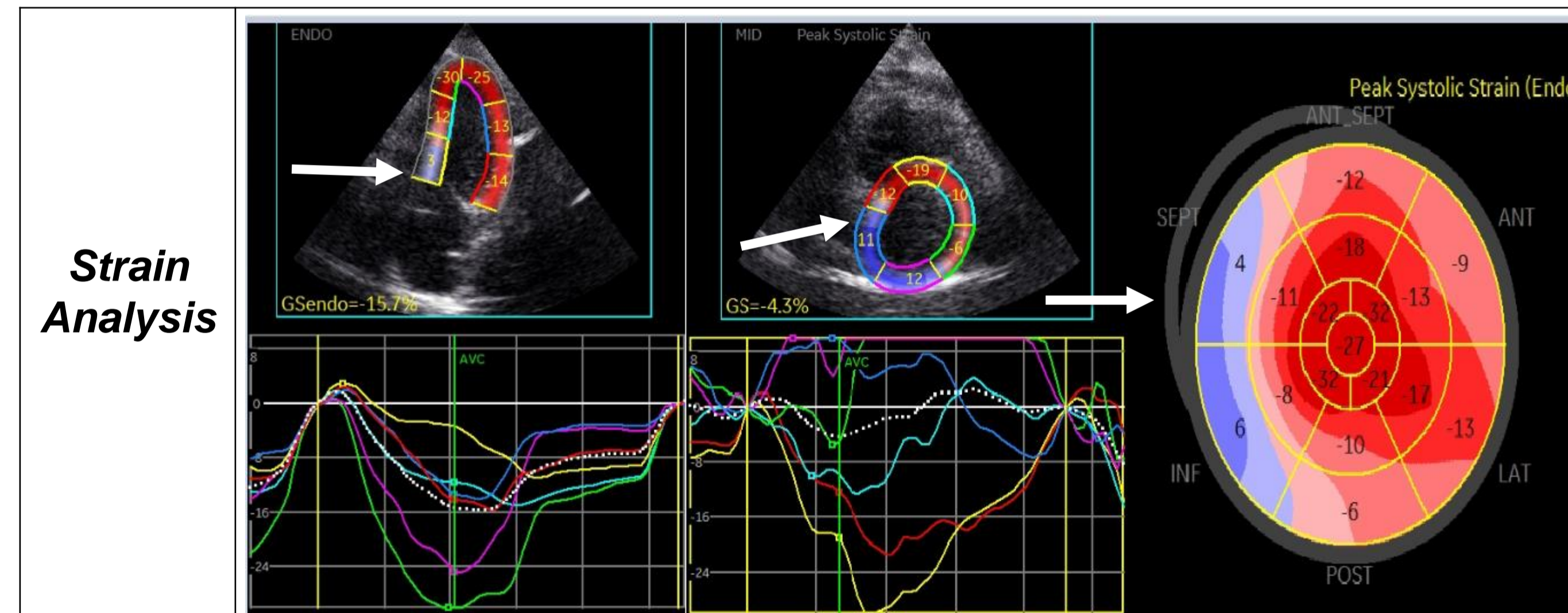
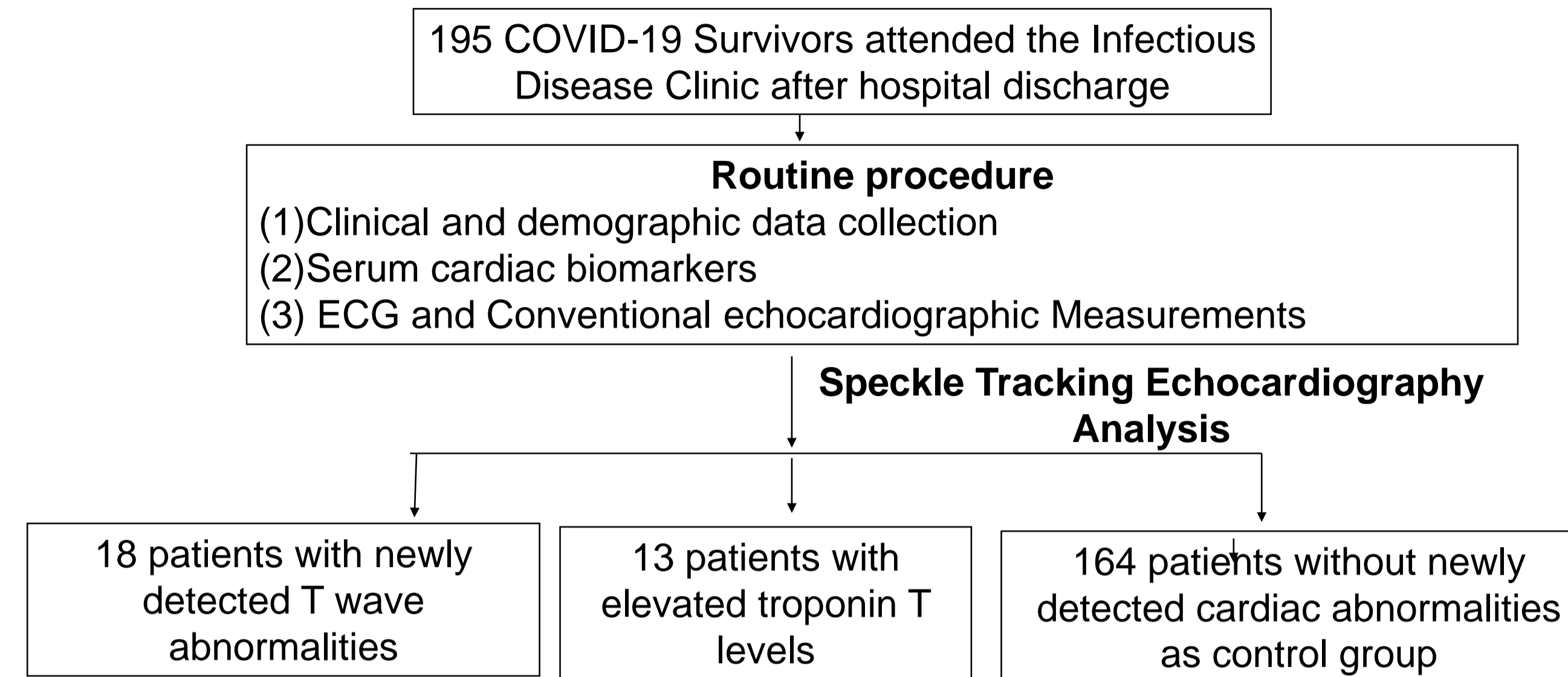
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Introduction

Several studies were reported the impact of COVID-19 infection on the cardiovascular (CV) system, however, few data focused on the subclinical myocardial damages in uncomplicated COVID-19 survivors after hospital discharge.

Methodology

We enrolled 195 uncomplicated COVID-19 survivors in this study after their immediate hospital discharge. Comprehensive cardiac screening algorithm was recommended to those patients, including electrocardiogram (ECG), echocardiography, and cardiac biomarkers. Patients were divided into T wave abnormalities group, elevated troponin T levels group, and no cardiac abnormalities group according to the aforementioned screening results. Strain echocardiography was performed to investigate the subclinical myocardial damages among those patients.



Demographics	TWA (n=18)	ETT(n=13)	Control (n=164)	P value
Age, years	55.4±9.8	73.2 ±5.5	39.8 ±2.1	0.000 * †
Sex: Female, n (%)	14(77.8%)	2 (15.4%)	72(44.4%)	0.002#†
SBP on admission	134.0 ± 5.4	139.8 ±11.7	136.9 ±2.3	0.94
DBP on admission	75.4 ± 7.8	73.6 ±5.3	85.0 ±1.6	0.009 *
T>37.3 °C, n (%)	7 (38.9%)	7 (53.8%)	44 (27.1%)	0.07
Hospital duration, days	15.1±1.8	23.0±4.4	18.7±0.6	0.09
Comorbidity				
HT, n (%)	6 (33.3%)	8(61.5%)	19 (11.5%)	0.000 * †
DM, n	2 (11.1%)	4(30.8%)	10 (5.9%)	0.003 *
CAD, n (%)	1(5.6%)	2(15.4%)	4 (2.4%)	0.04 *
CVD, n (%)	1 (5.6%)	1(7.7%)	2 (1.0%)	0.08
Malignancy, n (%)	1 (5.6%)	0(0%)	4 (2.4%)	0.59
CKD, n (%)	0 (0%)	1(7.7%)	1 (0.6%)	0.08
HF, n (%)	1 (5.6%)	1(0.3%)	0 (0%)	0.009 * †

Discussion

A total of 18 (9.2%) patients with T wave abnormalities, and 13 patients were detected with elevated troponin T level. Patients with cardiac abnormalities were relatively older and had a deteriorated left ventricular (LV) systolic and diastolic function, a higher level of NTproBNP and a higher rate of CV risk factors compared with those patients without cardiac abnormalities. Strain analysis indicated that segmental longitudinal strain in the basal and middle level of the interventricular septum (IVS), Peak circumferential strain of endomyocardial from basal to the middle level of the LV, and the segmental circumferential strain in IVS were significantly decreased in patients with cardiac abnormalities compared with those patients without cardiac abnormalities.

Conclusion

Uncomplicated COVID-19 survivors with T wave abnormalities or elevated Troponin T levels presented with decreased longitudinal and circumferential strain compared with those patients without cardiac abnormalities. Therefore, cardiac screening may be advisable to COVID-19 survivors after hospital discharge, to early detect subclinical cardiac involvement.

Reference

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3. Li Y, et al. Prognostic Value of Right Ventricular Longitudinal Strain in Patients With COVID-19. *JACC Cardiovascular imaging*. 2020;13:2287-2299.