

Hubungan antara faktor klinis, dan laboratoris saat admisi terhadap disfungsi Miokardium Biventrikel yang dievaluasi dengan speckle tracking ekokardiografi pada pasien Covid-19 dengan Komorbid Kardiovaskular 4 bulan pasca perawatan = Association between clinical and laboratory admission factors upon admission towards Biventricular Myocardial dysfunction evaluated by speckle tracking Echocardiography in Covid-19 patient with Cardiovascular Comorbid 4 months after hospitalization

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Abstrak

Latar Belakang : Infeksi COVID-19 dewasa ini telah diketahui memiliki implikasi jangka panjang meski periode akut telah tertangani, suatu fenomena yang dinamakan long COVID syndrome atau sindrom pasca COVID-19. Patofisiologi dari kejadian ini masih belum diketahui dengan jelas. Studi melaporkan bahwa sindrom pasca COVID-19 melibatkan beberapa organ, diantaranya adalah sistem kardiovaskular.

Pemeriksaan nilai LV GLS dan RV LS pada ekokardiografi dinilai akurat dalam mendeteksi disfungsi miokard dan fibrosis endomiokardial. Selain itu, hingga saat ini, data mengenai faktor-faktor saat admisi sebagai prediktor terhadap kejadian sindrom pasca COVID-19 masih terbatas.

Tujuan : Mengetahui nilai parameter ekokardiografi LV GLS dan RV LS sebagai penanda disfungsi miokard dan fibrosis jantung serta mengidentifikasi faktor-faktor saat admisi yang berpengaruh terhadap kejadian sindrom pasca COVID-19.

Metode : Penelitian ini adalah deskriptif-analisis menggunakan metode potong lintang. Pemilihan subjek dilakukan dengan metode consecutive sampling. Pemeriksaan ekokardiografi termasuk pemeriksaan global longitudinal strain (GLS) dilakukan oleh dua orang observer 4 bulan pasca perawatan rumah sakit.

Selanjutnya, analisis multivariat berupa regresi linear dilakukan untuk mengetahui faktor admisi yang berpengaruh terhadap perbedaan nilai GLS pada kelompok penelitian.

Hasil : 100 subjek dengan komorbiditas kardiovaskular dan riwayat COVID-19 memenuhi kriteria dan syarat penelitian. Ditemukan nilai penurunan nilai LV-GLS pada kelompok ini. Subjek dengan komorbiditas kardiovaskular tanpa riwayat COVID-19 (n=31, kontrol 1) yang telah melalui proses matching berdasarkan usia, gender, dan faktor resiko, serta subjek sehat (n=31, kontrol 2) sebagai pembandingan validitas GLS.

Terdapat perbedaan signifikan rerata nilai LV GLS antar 3 kelompok ($p < 0.05$, rerata \pm SB -16.17 ± 3.379 , -19.48 ± 1.141 , -21.48 ± 1.777 berturut-turut untuk kelompok kasus, kontrol 1, kontrol 2), dengan nilai paling rendah pada kelompok kasus. Faktor saat admisi yaitu status CAD memiliki hubungan yang signifikan ($p 0.038$) dengan penurunan LV GLS pada pasien post covid-19 dengan komorbid kardiovaskular.

Kesimpulan : Terdapat penurunan nilai LV GLS yang signifikan pada sindrom pasca COVID-19 disertai komorbiditas kardiovaskular. CAD merupakan prediktor penurunan fungsi maupun fibrosis jantung sebagai manifestasi sindrom pasca COVID-19.

.....Background : Recently, COVID-19 infection has been known to have a longer implication, even after the initial acute phase has been managed, a phenomenon termed as long COVID syndrome or “sindroma

pasca COVID-19". The exact pathophysiological mechanism of this event is still unknown. Previous studies reported that long COVID syndrome involves multiple organs, one of which is the cardiovascular system. Measurement of echocardiography LV GLS and RV LS values are reported to be accurate to detect myocardial dysfunction and endomyocardial fibrosis. Moreover, up until now, data regarding admission factors as predictors for long COVID syndrome incidences are still limited.

Objective : Assessing echocardiography LV GLS and RV LS values as a marker for myocardial dysfunction and heart fibrosis and identifying admission factors which may predict the incidence of long COVID syndrome

Methods : This is an observational study with a cross-sectional using a consecutive sampling method. Echocardiography including global longitudinal strain (GLS) measurement was done by two examiners 3 months after initial hospitalization. Multivariate analysis linear regression was subsequently used to investigate admission factors which are associated with differences in GLS measurement.

Results : Total of 100 subjects with cardiovascular comorbidities and prior COVID-19 infection were enrolled. Echocardiography examination showed lower GLS values in this group compared to the normal population. Age, sex and risk factors-matched subjects with cardiovascular comorbidity without a history of COVID-19 (n=31, Control 1) and healthy subjects (n=31, Control 2) were subsequently used as comparisons to validate GLS results. There were significant differences in LV-GLS levels between the three groups, with the lowest values measured in the case group ($p < 0.05$, mean \pm SD -16.17 ± 3.379 , -19.48 ± 1.141 , -21.48 ± 1.777 respectively for case, control 1, and control 2 groups). A history of coronary artery disease upon admission was found to be associated with decreased LV GLS values in recovered COVID-19 patients with cardiovascular comorbidity.

Conclusion : LV GLS values significantly decrease in long COVID syndrome with cardiovascular comorbidities. Having a previous history of CAD upon admission may serve as predictors of deteriorated functions or heart fibrosis as manifestations of long COVID syndrome.