Hubungan Perubahan Strain Atrium Kiri Terhadap Perubahan Kapasitas Fungsional Pada Pasien Mitral Stenosis Pasca Tindakan Balloon Mitral Valvuloplasty = Correlation Of Left Atrium Strain Changes To Functional Capacity Changes In Mitral Stenosis Patients Post Balloon Mitral Valvuloplasty

Yudhistira Kurnia, author

Abstrak

Latar Belakang: Kondisi MS akan menyebabkan terjadinya peningkatan tekanan atrium kiri secara progresif dan menyebabkan remodelling serta dilatasi atrium kiri. Proses ini akan berakhir dengan penurunan komplians dari atrium kiri dan menyebabkan perubahan secara morfologis dan fungsional. Beberapa studi menunjukkan pengukuran Strain atrium kiri pada pasca tindakan balloon mitral valvuloplasty (BMV) menunjukkan perbaikan yang bermakna. Namun belum ada yang menilai hubungan antara perubahan Strain atrium kiri dengan perbaikan kapasitas fungsional pada pasien MS pasca tindakan BMV.
Tujuan: Tujuan penelitian ini adalah untuk mengevaluasi hubungan antara perubahan Strain atrium kiri dengan perubahan kapasitas fungsional pada pasien MS pasca tindakan BMV.
Metode: Desain penelitian yang digunakan adalah studi dengan one group pre-post design. Penelitian ini menggunakan data pemeriksaan ekokardiografi dan data kapasitas fungsional pasien mitral stenosis yang dilakukan tindakan BMV pada Maret 2019 hingga April 2020. Dilakukan pengukuran strain atrium kiri dengan metode speckle tracking echocardiography. Data sebelum dan sesudah BMV dianalisis untuk mencari hubungan variabel terhadap perubahan kapasitas fungsional.
Hasil: Pasca tindakan BMV, terjadi perbaikan signifikan kapasitas fungsional yang ditandai dengan perbaikan median lama latihan (241 (18 – 1080) ke 606 (80 – 1900) detik, p <0.0001) dan perbaikan median nilai VO2max estimasi (18,8 (10,2 – 51,4) ke 33(12,6-83,2) mlO2/kg/menit, p <0.0001). Strain atrium kiri mengalami perubahan signifikan pasca tindakan BMV dari median 8(2-23)% ke 11(4-27)%. Dari uji korelasi didapatkan bahwa pre-MVG (r 0,23, adjusted R2 = 4,9%) berkorelasi terhadap perubahan kapasitas fungsional. Pada analisis bivariat dan multivariat didapatkan bahwa perubahan strain atrium kiri tidak berhubungan dengan perubahan kapasitas fungsional. Nilai pra MVA >1 cm2 (OR 7,37, IK 95% 1,0-54,35; p = 0,05) pra MVG > 10 mmHg (OR 6,6, IK 95% 1,71-25,5; p = 0,006) dan pra mPAP < 25 mmHg (OR 5,96, IK 95% 1,37-25,9; p = 0,017) berkorelasi terhadap perbaikan lama latihan pasca tindakan BMV.
Kesimpulan: Perubahan strain atrium kiri tidak berhubungan dengan perubahan kapasitas fungsional pada pasien MS pasca tindakan BMV.
.....Background: MS conditions will cause a progressive increase in left atrial pressure, remodelling and left atrial dilatation. This process will end with a decrease of left atrial compliance, causing morphological and functional changes. Several studies have shown that left atrial strain measurements after the BMV procedure showed significant improvement. However, no study has assessed the relationship between changes in left atrial strain and improvements in functional capacity in MS patients after the BMV procedure.
Objectives: This study aimed to evaluate the association between left atrial strain changes and functional capacity changes in MS patients after BMV procedures
Method: This is a one group pre-post design using retrospective data. This study used echocardiographic

and functional capacity data of mitral stenosis patients who underwent BMV procedures from March 2019 to April 2020. Left atrial strain was measured using the speckle tracking echocardiography method. Data before and after BMV were analyzed to find the association of variables to changes in functional capacity.
Results: After the BMV procedure, there was a significant improvement in functional capacity as indicated by an improvement in the median length of exercise (241 (18 – 1080) to 606 (80 – 1900) seconds, p <0.0001) and an improvement in the median estimated VO2max value (18.8 (10.2). – 51.4) to 33(12.6-83.2) mlO2/kg/min, p < 0.0001). The left atrial strain underwent a significant change after the BMV procedure from a median of 8(2-23)% to 11(4-27)%. From the correlation test it was found that pre-MVG (r 0.23, adjusted R2 = 4.9%) correlated with changes in functional capacity. In bivariate and multivariate analysis, it was found that changes in left atrial strain were not associated with changes in functional capacity. Pre MVA value >1 cm2 (OR 7.37, CI 95% 1.0-54.35; p = 0.05) pre MVG > 10 mmHg (OR 6.6, CI 95% 1.71-25.5 ; p = 0.006) and pre mPAP < 25 mmHg (OR 5.96, CI 95% 1.37-25.9; p = 0.017) correlated with the improvement in duration of exercise after the BMV action.
Conclusion: Changes in left atrial strain are not associated with changes in functional capacity in MS patients after the BMV procedure.