# Hubungan Mitral Valve Gradient Terhadap Kapasitas Fungsional Protokol Bruce termodifikasi pada Pasien Stenosis Mitral Rematik Pasca Komisurotomi Mitral Transkateter Perkutan = Association of Mitral Valve Gradient with Functional Capacity Modified Bruce Protocol in Rheumatic Mitral Stenosis post Baloon Mitral Valvuloplasty

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Abstrak

ABSTRAK<br>
Latar belakang: Studi sebelumnya menyimpulkan bahwa mitral valve gradient (MVG) merupakan parameter selain area katup mitral (AKM) yang berhubungan dengan perbaikan gejala pasca komisurotomi mitral transkateter perkutan (KMTP). Oleh karena itu, studi diperlukan untuk menjelaskan hubungan MVG terhadap perbaikan gejala secara objektif, dalam bentuk kapasitas fungsional.
Tujuan: Studi ini bertujuan untuk mengevaluasi hubungan MVG terhadap perubahan kapasitas fungsional pasca KMTP.
Bahan dan Metode: Studi quasi experimental dengan one group pre-post design terhadap 78 subjek. Pemeriksaan ekokardiografi dan treadmill Bruce termodifikasi dilakukan 1-2 hari sebelum dan 1-2 minggu setelah KMTP. Data sebelum dan setelah KMTP dianalisis untuk mencari hubungan variabel terhadap perbaikan kapasitas fungsional pasca KMTP. Perbaikan kapasitas fungsional didefinisikan sebagai perubahan lama latihan > 180 detik pasca KMTP.
Hasil: Rerata usia adalah 42 tahun, mayoritas perempuan (3,6:1) dengan rerata IMT 22,27 kg/m2. Sebesar 5,1% pasien merokok dengan komorbid stroke sebesar 14,1%. Sebelum KMTP, 53% memiliki irama sinus dengan mayoritas memiliki fungsi ventrikel kiri yang baik (rerata ejeksi fraksi 62%) dan fungsi ventrikal kanan yang baik (median tricuspid annular plane systolic excursion (TAPSE) 20 mm). Sebesar 97% pasien datang dengan kelas NYHA II sebelum KMTP dan mengalami perbaikan signifikan kapasitas fungsional pasca KMTP berupa perbaikan median lama latihan (241(18-1080) ke 603(30-1900) detik, p < 0,001) dan perbaikan median nilai VO2max estimasi (18,8(10,2-51,4) ke 32,8(10,6-83,2) mlO2/kg/menit, p<0,001). Dari uji korelasi, didapatkan variabel usia (r -0,23, adjusted R2=4,1%), pre-MVG (r 0,23, adjusted R2=4,2%), Δ MVG (r 0,31, adjusted R2= 9,0%) , dan pre-TR Vmax (r 0,3, adjusted R2=1,3%) berkorelasi terhadap perubahan kapasitas fungsional. Perbaikan kapasitas fungsional segera pasca KMTP tidak berhubungan dengan AKM pasca KMTP ≥ 1,5 cm2 (p= 0,14) dan perubahan AKM ≥ 200% pasca KMTP (p= 0,18). Penurunan MVG > 50 % pasca KMTP (OR 2,89, IK 95% 1,06-7,92; p = 0,038) dan TR Vmax sebelum KMTP > 3,4 m/s (OR 3,42, IK 95% 1,19-9,83; p = 0,023) merupakan prediktor perbaikan kapasitas fungsional segera pasca KMTP.
Kesimpulan: Penurunan MVG lebih dari 50% pasca KMTP berhubungan dengan perbaikan kapasitas fungsional segera pasca KMTP.
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ABSTRACT<br>
Introduction: Previous studies had shown that mitral valve gradient (MVG) was other parameter than mitral valve area (MVA) which had correlation with symptom improvement post baloon mitral valvuloplasty

(BMV). However, further study is needed to illuminate the assocation of MVG with clinical improvement objectively, in term of functional capacity.
Objective: This study aimed to determine the association between MVG and functional capacity alteration after BMV.
Material and Methods: Quasi exsperimental study with one group pre-post design was applied in 78 subjects. Echocardiography and Modified Bruce Protocol assessment were done 1-2 days before and 1-2 weeks after BMV. Pre and post data were analized to obtain association of variables with functional capacity alteration immediately after BMV. Improvement of functional capacity was defined as alteration of exercise time more than 180 seconds after KMTP.
Results: The mean age was 42 y.o, female dominant (3,6:1), mean BMI was 22,27 kg/m2. Of 5,1% patient were smoker with most commonly observed comorbidities include stroke (14,1%). Majority 53% had sinus rhythm with dominant good left ventricular function (mean ejection fraction 62%) and good right ventricular function (median tricuspid annular plane systolic excursion (TAPSE) 20 mm). Of 97% patients presented with NYHA class II before BMV with significant improvement of functional capacity after BMV such as median exercise time alteration (241(18-1080) to 603(30-1900) s, p < 0,001) and median estimate VO2 max value alteration (18,8(10,2-51,4) to 32,8(10,6-83,2) mlO2/kg/minute, p<0,001). From correlation test, age (r -0,23, adjusted R2=4,1%), pre-MVG (r 0,23, adjusted R2=4,2%), Δ MVG (r 0,31, adjusted R2= 9,0%), and pre-TR Vmax (r 0,3, adjusted R2=1,3%) were corelated with functional capacity alteration. Improvement of functional capacity did not significantly associate with post MVA>1,5 cm2 (p= 0,14) and AKM alteration after BMV ≥ 200% (p= 0,18). Reduction of MVG > 50 % after BMV (OR 2,89, 95% CI 1,06-7,92; p = 0,038) and TR Vmax before BMV > 3,4 m/s (OR 3,42, 95% CI 1,19-9,83; p = 0,023) were predictor of functional capacity improvement immediately after BMV.
Conclusions: Reduction of MVG more than 50% had association with immediate improvement of functional capacity post BMV.