Efektivitas Pemberian Glutamin Terhadap Tahanan Vaskular Sistemik Pada Pasien Pascabedah Pintas Arteri Koroner Dengan Mesin Pintas Jantung Paru Fraksi Ejeksi Rendah = Effectiveness of glutamine administration in regulating systemic vascular resitance in patients with low ejection fraction undergo coronary artery bypass graft surgery using cardiopulmonary bypass

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Abstrak

Latar Belakang: Salah satu tata laksana revaskularisasi pada Penyakit jantung koroner (PJK) adalah bedah pintas arteri koroner (BPAK). Salah satu teknik BPAK menggunakan mesin pintas jantung paru (PJP) yang dapat menyebabkan reaksi inflamasi sehingga terjadi penurunan tahanan vaskular sistemik (TVS) sehingga meningkatkan mortalitas dan morbiditas. Glutamin adalah asam amino non esensial yang dapat menjadi esensial kondisional pada keadaan kritis dan memiliki peran membantu regulasi tonus endotel.
Metodologi: Penelitian ini merupakan studi observasional analitik dengan desain penelitian kohort retrospektif. Sampel dipilih secara metode consecutive sampling dan metode randomisasi blok. Variabel-variabel yang diperiksa dilakukan uji normalitas. Variabel dengan sebaran normal dilakukan analisis statistik independent t-test, sedangkan variabel dengan sebaran tidak normal dilakukan analisis statistik Mann-Whitney test.
Hasil: Berdasarkan hasil penelitian dapat disimpulkan bahwa pemberian glutamin preoperasi pada pasien penyakit jantung koroner dengan FE rendah yang menjalani BPAK mengalami penurunan TVS pada jam keenam pascaoperasi (p = 0,04) namun mengalami peningkatan curah jantung pada jam keenam (p = 0,015). Hasil pada jam ke-24 TVS pascaoperasi juga mengalami penurunan namun terlihat signifikan bila melihat faktor perancu -844,9+27,8 (ejeksi fraksi praoperasi)+0,4 (Kadar Glutamin Praoperasi)+14 (Umur) Adjusted R square = 21,9%. Curah jantung jam ke-24 pascaoperasi mengalami peningkatan secara signifikan tanpa melihat variabel perancu (p = 0,037) maupun dengan melihat variabel perancu umur (p = 0,003) dan FE praoprasi (p = 0,006) (adjusted r quare = 23,6%).
Kesimpulan: Pada pasien dengan fraksi ejeksi rendah yang menjalani BPAK menggunakan mesin PJP, pemberian glutamin intravena praoperasi menyebabkan penurunan TVS disertai dengan peningkatan curah jantung pada pemantauan jam keenam dan jam ke-24.
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Background: Coronary Artery Bypass Graft (CABG) is one of revascularization treatment in coronary artery disease patient. The most common CABG technique uses a cardiopulmonary bypass (CPB) machine which can cause an inflammatory reaction resulting in a decrease in systemic vascular resistance (SVR) thereby increasing mortality and morbidity. Glutamine is a non-essential amino acid that can become conditionally essential in critical situations such as systemic inflammatory respose syndrome (SIRS) and has a role in assisting the regulation of endothelial tone.
Methods: This study is an analytic observational study with a retrospective cohort study design. Samples were selected by consecutive sampling method and block randomization method. The variables examined were tested for normality. Variables with normal distribution were analyzed statistically by independent t-

test, while variables with abnormal distribution were analyzed by Mann-Whitney test. Each confounding variables then put together and analyzed statistically with multivariate approach.
Results: Based on the results of the study, it can be concluded that preoperative administration of glutamine in patients with coronary heart disease with low ejection fraction (EF) who underwent CABG experienced a decrease in SVR at the sixth postoperative hour ($p = 0.04$) but increased cardiac output at the sixth hour ($p = 0.015$). The results at 24 hours postoperative also shows decreased SVR but were significant when looking at its confounding factors for preoperative EF ($p = 0.001$), preoperative glutamine levels ($p = 0.01$), and age ($p = 0.013$) (adjusted r square = 21.9%). Cardiac output at 24 hours postoperatively increased significantly regardless of confounding variables ($p = 0.037$) or by looking at its confounding factor; age ($p = 0.003$) and preoperative EF ($p = 0.006$) (adjusted r square = 23.6%).
Conclussion: In patients with low EF undergoing CABG with CPB, intravenous glutamin administration can decrease SVR and increase cardiac output in 6 hours and 24 hours observation.