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Hubungan antara Indeks Kebocoran Kapiler, Mikroalbuminuria dan Efektif Renal Perfusion Pressure dengan Kejadian AKI pada Pasien Pasca Operasi Bedah Abdomen Mayor = Relationship between Capillary Leakage Index, Microalbuminuria, and Effective Renal Perfusion Pressure with Incidence of AKI after Mayor Abdominal Surgery

Ni Made Ayu Suria Mariati, author

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Abstrak

Latar Belakang: Pembedahan dikatakan sebagai penyebab 40% kasus AKI di rumah sakit. Penelitian difokuskan pada pengaruh ekstravasasi cairan ke interstitial yang disebabkan karena kebocoran kapiler. Kebocoran kapiler juga mengakibatkan terjadinya mikroalbuminuria. Peningkatan CVP atau tekanan intraabdominal (IAP) akan menghasilkan penurunan filtrasi ginjal sesuai dengan derajat transmisi tekanan ke glomeruli. Penelitian ini dimaksudkan untuk melihat hubungan antara indeks kebocoran kapiler (CLI), mikroalbuminuria (ACR) dan efektif renal perfusion pressure (eRPP) sebagai prediktor AKI pada pasien pasca bedah abdomen mayor.

Pasien dan metode: Penelitian merupakan studi kohort prospektif observasional pasien usia 18-65 tahun yang menjalani operasi bedah abdomen mayor sejak tanggal 29 Agustus sampai 21 Desember 2021 di RSUD Provinsi NTB dan mendapatkan total 76 subjek penelitian, dengan 2 pasien drop out. CLI, ACR, dan eRPP diukur pra-operasi, 12 jam dan 36 jam pasca bedah dengan kejadian AKI diamati hingga hari keempat pasca bedah. Uji statistik menggunakan uji chi square dilanjutkan cox- regresi.

Hasil: Data observasi CLI pada jam ke-0 diperoleh RR 1,29 pada titik potong ROC CLI >50. Data observasi ACR pada jam ke-0 dan jam ke-12 masing-masing memperoleh RR 1,261 (p=0,104; 95% CI 1,003-1,586) dan RR 1,211 (p=0,10; 95% CI 1,017-1,444). Data eRPP pada setiap jam pengukuran pada analisis bivariate tidak bermakna secara statistik namun pada analisis multivariate menggunakan cox regresi untuk mengetahui hubungan CLI, ACR, dan eRPP terhadap kejadian AKI setelah di-adjusted variabel perancu pada jam ke-0 diperoleh nilai RR dari variabel eRPP sebesar 9,125 dengan p= 0,037; CI 95% = 1,141293 - 72,95725. Subyek dengan AKI mengalami mortalitas sebesar 31,58% dan berisiko 2,384 kali untuk mengalami kematian (p = 0,0351, CI 95% = 1,133-5,018).

Kesimpulan: Subjek dengan nilai eRPP <40 berisiko 9,125 kali untuk mengalami AKI. Subyek yang mengalami AKI berisiko 2,384 kali untuk mengalami kematian.
.....Background: Surgery caused of 40% of AKI cases in hospital which often occurs in the early days up to 4 days after surgery. The pathophysiology of postoperative AKI is multifactorial, the study focused on the effect of extravasation of fluid into the interstitium caused by capillary leakage. Capillary leakage also results in microalbuminuria. An increase in CVP or intra-abdominal pressure (IAP) will result decrease in renal filtration according to the degree of pressure transmission to the glomeruli. This study was intended to examine the relationship between capillary leakage index (CLI), microalbuminuria (ACR) and effective

renal perfusion pressure (eRPP) as predictors of AKI in patients after major abdominal surgery.

Patients and method: This is an observational analytic study with a prospective longitudinal cohort design with consecutive sampling of patients aged 18-65 years who underwent major abdominal surgery from August 29, 2021 to December 21, 2021. The study included a total of 76 subjects, with 2 patients dropped out. The variables were CLI, ACR, and eRPP were measured preoperatively, 12 hours postoperatively, and 36 hours postoperatively and the incidence of AKI was observed until the fourth postoperative day. Statistical test using chi square test then followed by logistic regression to assess multivariately if it meets the requirements.

Results: CLI observation data at hour 0 obtained RR 1.29 at the point of intersection ROC CLI >50. ACR observation data at hour 0 and hour 12 each obtained RR 1.261 (p=0.104; 95% CI 1.003-1.586) and RR 1.211 (p=0.10; 95% CI 1.017-1.444). The eRPP data at each hour of measurement in bivariate analysis was not statistically significant, but in multivariate analysis using cox regression to determined relationship between CLI, ACR, and eRPP on the incidence of AKI after adjusting confounding variables at 0th hour the RR value of the eRPP was 9.125 with p = 0.037; 95% CI = 1,141293 - 72,95725. Subject with AKI experience a mortality of 31,58% and 2.384 times risk of mortality (p = 0,0351, CI 95% = 1,133-5,018).

Conclusion: Subjects with eRPP value <40 have 9,125 times experiencing AKI. Subjects who experienced AKI had a 2,384 times risk of mortality.