

Perbedaan efek pemberian koloid dan kristaloid terhadap endotelial glikokaliks pada pasien pasca bedah pintas arteri koroner = Contrasting effect of colloid and crystalloid administration on endothelial glycocalyx in post coronary artery bypass graft patients

Ima Ansari Kusuma, author

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Abstrak

[ABSTRAK

Latar Belakang : Endotelial glikokaliks merupakan bagian penting dalam barrier vaskular. Keadaan inflamasi, hiperglikemia, iskemia, dan hipervolemia dapat menyebabkan kerusakan glikokaliks. Kerusakan glikokaliks menyebabkan cairan terekstrasvasasi ke interstisial. Pada pasien pasca BPAK terjadi peningkatan syndecan-1 dalam plasma yang merupakan penanda terjadinya kerusakan endotelial glikokaliks.

Hipervolemia pasca BPAK juga dapat memperburuk kerusakan glikokaliks dan hipervolemia sendiri berhubungan dengan kejadian komplikasi mayor pasca operasi. Pemilihan jenis cairan yang tepat diperlukan pada kondisi ini.

Tujuan : Mengetahui apakah terdapat perbedaan efek pemberian koloid dan kristaloid terhadap endotelial glikokaliks pada pasien pasca bedah pintas arteri koroner.

Metode Penelitian : Penelitian ini merupakan studi intervensi acak pada pasien pasca BPAK dengan pengambilan sampel secara konsekutif. Pasien yang tidak responsif terhadap pemberian cairan, memiliki fungsi pompa jantung pre operasi yang turun, memiliki kelainan fungsi ginjal, atau menggunakan IABP saat operasi akan dieksklusi dari penelitian. Responsivitas terhadap cairan dinilai dengan pemeriksaan Doppler karotis. Pasien kemudian akan diberikan cairan koloid atau kristaloid secara acak. Sampel darah diambil pre dan pasca pemberian cairan. Kadar syndecan-1 diperiksa dengan metode ELISA.

Hasil : Subyek penelitian sebanyak 54 orang dengan 27 orang mendapat cairan koloid dan 27 orang mendapat cairan kristaloid. Hasil pemeriksaan syndecan-1 pre pemberian cairan adalah 1,97 (0,29-14,03) ng/ml pada kelompok yang mendapat Gelofusine dan 2,14 (0,68-11,80) ng/ml pada kelompok Ringer's lactate ($p = 0,736$). Syndecan-1 pasca pemberian cairan adalah 1,78 (0,23-10,98) ng/ml pada kelompok Gelofusine dan 2,08 (0,72-12,23) ng/ml pada kelompok Ringer's lactate ($p=0,276$). Selisih antara syndecan-1 pre dan pasca pemberian cairan adalah 0,23 (-1,3 - 3,55) ng/ml pada kelompok Gelofusine dan 0,14 (-2,12 - 1,80) ng/ml pada kelompok Ringer's lactate ($p = 0,043$). Syndecan-1 turun pada 23 pasien (85,5%) kelompok Gelofusine dan 15 pasien (55,6%) kelompok Ringer's lactate ($p = 0,017$). Analisis bivariat pada beberapa faktor yang diduga mempengaruhi perubahan syndecan-1 menunjukkan bahwa jenis cairan merupakan satu-satunya faktor yang berpengaruh.

Kesimpulan : Penelitian ini membuktikan bahwa terdapat perbedaan efek antara pemberian koloid (Gelofusine) dan kristaloid (Ringer's lactate) terhadap endotelial glikokaliks pada pasien pasca BPAK. Pemberian koloid dapat lebih memperbaiki kerusakan endotelial glikokaliks yang terjadi pasca BPAK.

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ABSTRACT

Background : Endothelial glycocalyx is an important part of vascular barrier. Inflammation, hyperglycemia, ischemia, and hypervolemia contribute to shedding of the glycocalyx. Damage to the glycocalyx can make

fluid extravasation to interstitial. Increasing syndecan-1 value in plasma as marker of shedding the endothelial glycocalyx can occur in the post CABG patients. Hypervolemia is a worsening factor of the shedding in glycocalyx and hypervolemia contribute to major complication after operation. It is important to choose the appropriate fluid for this patient.

Objective : The aim of this study is to examine the difference effect of colloid and crystalloid administration on endothelial glycocalyx in post CABG patients.

Methods : This is a randomized trial which recruits post CABG patients consecutively. Non fluid responsive, reduced left ventricle ejection fraction, reduced renal function, or used of IABP during operation are excluded. Fluid responsiveness will be measured by carotid Doppler. Patients then given colloid or crystalloid randomly. Blood samples were taken before and after fluid loading. Syndecan-1 value examined using ELISA method.

Result : The total of 54 subjects with 27 patients received colloid and 27 patients received crystalloid. Syndecan-1 pre loading are 1,97 (0,29-14,03) ng/ml in Gelofusine group vs 2,14 (0,68-11,80) ng/ml in Ringer's lactate group ($p = 0,736$). Syndecan-1 post loading are 1,78 (0,23-10,98) ng/ml in Gelofusine group vs 2,08 (0,72-12,23) ng/ml in Ringer's lactate group ($p=0,276$). The difference of syndecan-1 value in pre and post fluid loading are 0,23 (-1,3 - 3,55) ng/ml in Gelofusine group and 0,14 (-2,12 - 1,80) ng/ml in Ringer's lactate group ($p = 0,043$). Lowering syndecan-1 occurred in 23 patients (85,2%) in Gelofusine group and 15 (55,6%) in Ringer's lactate group ($p= 0,017$). Bivariate analysis showed that kind of fluid is the only factor can influence the difference of syndecan-1.

Conclusion : There is contrasting effect of colloid and crystalloid administration on endothelial glycocalyx in post CABG patients. Colloid can reduce shedding of the endothelial glycocalyx after CABG.,

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