Brain derived protein, soluble tnfr-1, laktat, saturasi vena sentral, dan oksigen serebral sebagai prediktor defisit neurologis pada operasi koreksi penyakit jantung bawaan = Brain-derived protein, soluble tumor necrosis factor receptor-1, lactate, central vein, and cerebral oxygen saturation as the predictor of neurological deficit in congenital heart disease corrective operation

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Abstrak

ABSTRAK
Pada operasi koreksi penyakit jantung bawaan PJB dengan teknik pintas jantung paru PJP , proses sindrom respons inflamasi sistemik SRIS sering menjadi penyulit pascaoperasi. Disfungsi mitokondria pada SRIS diawali dengan pelepasan mediator inflamasi TNF-. Dampak cedera neurologis pascabedah belum dapat dihindari. Biomarker Brain derived protein S100B dapat digunakan sebagai penanda hipoksia serebral akibat disfungsi mikrosirkulasi dan mitokondria pada operasi PJB. Pemantauan keadaan hipoksia serebral diperlukan karena kejadian awal defisit neurologis sering tidak menimbulkan manifestasi klinis. Near infrared spectroscopy NIRS merupakan salah satu alat yang dapat memantau penghantaran oksigen ke otak dengan mengukur saturasi oksigen serebral SctO 2 . Penelitian ini bertujuan untuk mengevaluasi peran S100B, sTNFR-1, laktat, saturasi vena cava superior dan saturasi oksigen serebral sebagai prediktor kejadian defisit neurologis pada operasi koreksi PJB. Penelitian ini bersifat kohort propsektif. Kriteria inklusi adalah pasien anak dengan PJB usia 1 bulan minus;6 tahun yang menjalani operasi koreksi. Kriteria eksklusi adalah pasien anak dengan sindrom Down, dengan arteri koroner tunggal, dan yang orang tuanya menolak berpartisipasi dalam penelitian. Dalam analisis, subjek dibagi menjadi 2 kelompok yakni kelompok 1 mengalami defisit neurologis dan kelompok 2 tidak mengalami defisit neurologis . Semua subjek dipantau selama perawatan di ICU, dan tetap diikuti sampai keluar rumah sakit. Pemeriksaan darah dilakukan dalam tiga kali pemantauan: pra-operasi, akhir PJP, dan 4 jam pasca-PJP. Monitoring NIRS dilakukan selama 24 jam pascabedah di ICU. Selama periode Maret 2015 minus;Oktober 2015, didapatkan 51 pasien yang diteliti. Terdapat perbedaan proporsi yang bermakna antara konsentrasi S100B, sTNFR-1, laktat, dan NIRS AUC 20 baseline saturasi serebral pasien PJB pascabedah koreksi dengan PJP pada kelompok berdasarkan defisit neurologis. Parameter tersebut dapat dipakai sebagai model prediktor kejadian defisit neurologis pascabedah jantung dengan PJP. Nilai S100B, sTNFR-1, laktat, dan nilai NIRS AUC 20 dari baseline saturasi serebral dapat digunakan sebagai prediktor kejadian defisit neurologis pascabedah pada operasi PJB dengan mesin PJP.<hr />In congenital heart disease CHD surgery using cardiopulmonary bypass CPB machine, systemic inflammation response syndrome SIRS process often causes post-operation complication. Mitochondria dysfunction in SRIS starts with the release of inflammation mediator TNF-? and sTNFR-1. Neurological injury after pediatric congenital heart surgery still cannot be avoided. Study about brain derived protein S100B as a biomarker for cerebral hypoxia caused by microcirculation and mitochondria disfunction as SRIS consequence in PJP in pediatric CHD surgery has yet to be conducted. Observation to find cerebral hypoxia is needed because the early stages of cerebral hypoxia often not show any symptoms. NIRS is one of the tools for observing oxygen delivery to the brain by measuring the cerebral oxygen

saturation SctO 2 . In Indonesia, NIRS is still not common to be used and there are no studies about it yet. This study aimed to evaluate the role of S100B, sTNFR-1, lactate, saturation of superior vena cava and cerebral saturation as the predictor of neurological deficiency incidence on correction of CHD. This was a prospective cohort research. Inclusion criteria were children with CHD aged 1 month minus;6 years old who underwent corrective operation. Exclusion criterias were children with Down syndrome, with single coronary artery, and whose parents declined to participate in this study. In analysis, subjects were divided into 2 groups; group 1 with neurological deficit and group 2 without neurological deficit. All subjects were observed closely while they were in ICU, observed until they discharge from hospital. Blood examination were done 3 times: before surgery, after CPB, and 4 hours after CPB. Monitoring of NIRS was done during 24 hours after surgery in ICU. During March minus;October 2015, there were 51 patients included. There are significant difference for value of S100B, STNFR-1, lactate, and NIRS AUC 20 baseline of cerebral saturation between groups based on neurological deficit occurrence. Those parameters could be used as predictor of neurologic deficiency incidence post operation using CPB in CHD children. In CHD patients who underwent corrective operation with CPB, S100B value, sTNFR1, lactate, and AUC 20 baseline of cerebral saturation could be used as predictor of neurologic deficit after corrective operation.