

# Systemic Inflammatory Response Syndrome pada Conventional Coronary Artery Bypass dan Off-Pump Coronary Artery Bypass = Systemic Inflammatory Response Syndrome on Conventional Coronary Artery Bypass and Off-Pump Coronary Artery Bypass

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## Abstrak

Latar belakang: Operasi jantung terbuka dengan menggunakan mesin bypass kardiopulmoner (CPB) berpotensi menimbulkan respons inflamasi yang signifikan. Salah satu penyebab respons inflamasi ini adalah kontak darah dengan sirkuit ekstrakorporeal dan shear stress non-fisiologis selama operasi pompa CPB. Penelitian ini bertujuan untuk menentukan teknik mana yang menghasilkan respons sindrom inflamasi sistemik (SIRS) yang lebih ringan.

Metode: Penelitian kohort retrospektif. Pengambilan data dilakukan di Rumah Sakit Jantung dan Pembuluh Darah Harapan Kita (RSJPDHK) sejak Juli 2018 hingga Februari 2023. Subjek yang direkrut secara konsekutif adalah pasien dengan diagnosis penyakit jantung koroner yang menjalani operasi bedah pintas arteri koroner, baik dengan menggunakan teknik CCABG atau dengan teknik OPCAB. Setelahnya subjek dilakukan pemeriksaan IL-6 pada 6 jam pasca operasi, CRP dan PCT pada 6, 24, dan 48 jam pascaoperasi. Setelahnya, pasien dinilai keluaran SIRS dan mortalitasnya.

Hasil: Total subjek penelitian ada 70 subjek, dengan perbandingan laki-laki yang menjalani OPCAB (82,9%) dan CCABG (91,4%), sisanya berjenis kelamin perempuan. Terdapat perbedaan bermakna antara SIRS dengan jenis operasi ( $p = 0,048$ ). Kadar IL-6 pada 6 jam pascaoperasi menunjukkan hasil berbeda bermakna dengan jenis operasi ( $0,014$ ). Pada 24 jam pascaoperasi, penanda inflamasi menunjukkan hasil berbeda bermakna pada CRP ( $p = 0,013$ ) dan PCT ( $0,001$ ). Sedangkan pada 48 jam pascaoperasi juga menunjukkan hasil berbeda bermakna pada CRP ( $p = 0,002$ ) dan PCT ( $p = 0,022$ ). Peningkatan angka kejadian aritmia pada CCABG menunjukkan perbedaan bermakna juga dengan nilai  $p < 0,001$  (IK95% 6,14(1,63-23,16)).

.....Background: Open heart surgery using a cardiopulmonary bypass (CPB) machine has the potential to induce a significant inflammatory response. One of the causes of this inflammatory response is blood contact with the extracorporeal circuit and non-physiological shear stress during CPB pump operation. This study aims to determine which technique yields a milder systemic inflammatory response syndrome (SIRS) outcome.

Method: This is a retrospective cohort study. Data collection was conducted at Harapan Kita Heart and Blood Vessel Hospital (RSJPDHK) from July 2018 to February 2023. Consecutively recruited subjects were patients diagnosed with coronary heart disease who underwent coronary artery bypass grafting (CABG) surgery, either using the conventional technique (CCABG) or off-pump technique (OPCAB). Subsequently, IL-6 levels were examined at 6 hours post-surgery, while CRP and PCT levels were measured at 6, 24, and 48 hours post-surgery. Following these assessments, patients were evaluated for the occurrence of systemic inflammatory response syndrome (SIRS) and mortality.

Result: There were a total of 70 subjects, with a comparison of males who underwent OPCAB (82.9%) and CCABG (91.4%), the rest were female. There was a significant difference between SIRS and the type of

surgery ( $p = 0.048$ ). IL-6 levels at 6 hours postoperatively showed significantly different results with the type of surgery (0.014). At 24 hours postoperatively, inflammatory markers showed significantly different results for CRP ( $p = 0.013$ ) and PCT (0.001). Whereas at 48 hours postoperatively it also showed significantly different results on CRP ( $p = 0.002$ ) and PCT ( $p = 0.022$ ). The increase in the incidence of arrhythmias in CCABG also showed a significant difference with a value of  $p < 0.001$  (95% CI 6.14 (1.63-23.16)).