

ABSTRAK

KORELASI NILAI END-TIDAL CO₂ SEBELUM DAN SETELAH PENGGUNAAN *CARDIOPULMONARY BYPASS* TERHADAP MORBIDITAS DAN MORTALITAS PASIEN BEDAH JANTUNG *CORONARY ARTERY BYPASS GRAFT-ON PUMP* DI RSUP DR KARIADI SEMARANG

Tomy Suharsoyo, Hari Hendriarto, Doso Sutiyono

Departemen Anestesiologi dan Terapi Intensif, Fakultas Kedokteran Universitas Diponegoro/RS Dr. Kariadi Semarang, Jawa Tengah, Indonesia

Latar Belakang : Jenis operasi jantung yang paling umum untuk orang dewasa adalah CABG, yang didalam prosedurnya memerlukan penggunaan CPB. Kontak darah dengan permukaan nonendotel dari sirkuit CPB menginduksi respon inflamasi yang intens. Pengukuran EtCO₂ dapat mencerminkan adanya perubahan mendadak pada curah jantung. ETCO₂ memprediksi kelangsungan hidup, sementara tingkat ETCO₂ yang rendah memprediksi kematian.

Tujuan : Menganalisis korelasi nilai ETCO₂ terhadap morbiditas dan mortalitas pasien operasi jantung CABG on-pump di RSUP dr. Kariadi, Semarang.

Metode : Penelitian ini merupakan penelitian observasional dengan desain kohort retrospektif, dengan populasi target pasien yang menjalani operasi CABG *on pump* di RSUP dr Kariadi bulan Januari 2022 - Desember 2022 yang memenuhi kriteria inklusi dan eksklusi. Data yang digunakan ialah data sekunder melalui rekam medis elektronik pasien.

Hasil : Sebanyak 62 pasien menjadi subjek penelitian. Ditemukan hubungan bermakna nilai delta ETCO₂ sebelum dan setelah penggunaan CPB pada pasien meninggal dan masih hidup setelah perawatan pasca operasi jantung CABG ($p= 0,01$). Hubungan yang bermakna juga didapatkan antara nilai ETCO₂ sebelum dan setelah penggunaan CPB terhadap perubahan nilai *Cardiac Output* dan juga terhadap SVR ($p <0,001$). Tidak didapatkan hubungan yang bermakna nilai ETCO₂ sebelum dan setelah penggunaan CPB terhadap lama perawatan ICU, disfungsi ginjal, dan kejadian stroke.

Kesimpulan : Semakin rendah nilai ETCO₂ setelah penggunaan *cardiopulmonary bypass* dibandingkan sebelum penggunaan *cardiopulmonary bypass* akan meningkatkan luaran mortalitas. Selain itu, Didapatkan bukti adanya korelasi nilai ETCO₂ sebelum dan setelah penggunaan *cardiopulmonary bypass* terhadap perubahan nilai *Cardiac Output*. Tidak didapatkan bukti adanya korelasi nilai ETCO₂ sebelum dan setelah penggunaan *cardiopulmonary bypass* terhadap lama perawatan ICU, disfungsi ginjal, dan kejadian stroke.

Kata kunci : CABG on pump, CPB, EtCO₂, morbiditas, mortalitas

ABSTRACT

CO₂ END-TIDAL VALUE CORRELATION BEFORE AND AFTER THE USE OF CARDIOPULMONARY BYPASS ON MORBIDITY AND MORTALITY OF CORONARY ARTERY BYPASS GRAFT-ON PUMP PATIENTS AT RSUP DR KARIADI, SEMARANG

Tomy Suharsoyo, Hari Hendriarto, Doso Sutyono

Department of Anesthesiology and Intensive Care, Diponegoro University Faculty of Medicine/Dr. Kariadi Hospital, Semarang City, Central Java Province, Indonesia

Background : The most common type of heart surgery for adults is CABG, which in the procedure requires the use of CPB. Blood contact with the nonendothelial surface of the CPB circuit induces an intense inflammatory response. EtCO₂ measurements may reflect sudden changes in cardiac output. ETCO₂ predicts survival, while low ETCO₂ levels predict death.

Purpose : Analyzing the correlation between EtCO₂ values on morbidity and mortality of on-pump CABG cardiac surgery patients at RSUP dr. Kariadi, Semarang.

Methods : This study is an observational study which design is a retrospective cohort, with a target population of patients undergoing CABG on pump surgery at RSUP Dr. Kariadi in January 2022 - December 2022 who meet the inclusion and exclusion criteria. The data used is secondary data through the patient's electronic medical record.

Result : A total of 62 patients became research subjects. A significant correlation was found for ETCO₂ delta values before and after using CPB in patients who died and were still alive after postoperative cardiac CABG treatment ($p = 0.01$). A very significant correlation was also found between ETCO₂ values before and after using CPB on changes in cardiac output values and also on SVR ($p < 0.001$). There was no significant relationship between ETCO₂ before and after using CPB on length of ICU stay, kidney dysfunction, and stroke.

Conclusion : The lower the ETCO₂ value after the use of CPB compared to before the use of CPB will increase the mortality outcome. In addition, there was evidence that there was a correlation between the ETCO₂ value before and after the use of cardiopulmonary bypass to changes in CO and SVR values. There was no evidence of a correlation between the ETCO₂ value before and after the use of cardiopulmonary bypass on length of treatment in ICU, kidney dysfunction, and the incidence of stroke.

Keywords: CABG on pump, CPB, EtCO₂, morbidity, mortality