

Perbandingan penggunaan cardiopulmonary bypass dan tanpa cardiopulmonary bypass dalam operasi bidirectional cavopulmonary shunt terhadap lama rawat di Intensive Care Unit dan kejadian low cardiac output syndrome = Comparison of the use of cardiopulmonary bypass and without cardiopulmonary bypass in bidirectional cavopulmonary shunt surgery on length of Intensive Care Unit Stay and incidence of low cardiac output syndrome

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Abstrak

Latar Belakang

Penggunaan cardiopulmonary bypass (CPB) dalam bedah jantung bidirectional cavopulmonary shunt (BCPS) pada anak dapat memicu low cardiac output syndrome (LCOS). Pasien dengan LCOS berhubungan dengan lama rawat intensive care unit (ICU) yang berkepanjangan, sehingga berisiko tinggi mengalami komplikasi penyerta. Meskipun faktor CPB dan LCOS berpotensi memengaruhi lama rawat ICU, belum ada penelitian serupa di Indonesia yang mengevaluasi hubungan ini pada pasien BCPS. Metode Penelitian ini menggunakan desain kohort retrospektif dengan sampel 109 pasien (63 laki-laki, 44 perempuan) yang menjalani operasi BCPS di Rumah Sakit Cipto Mangunkusumo dari Januari 2019 hingga Juni 2024. Analisis bivariat dan multivariat digunakan untuk mengevaluasi hubungan antara penggunaan CPB dan faktor lainnya terhadap kejadian LCOS serta lama rawat ICU.

Hasil

Pasien yang menjalani BCPS tanpa CPB memiliki penurunan risiko mengalami LCOS (aOR = 0,29, CI 95% 0,11 – 0,77, $p < 0,05$). Namun, CPB bukan faktor prediktor independen yang signifikan terhadap lama rawat ICU ($p > 0,05$). Lama rawat ICU lebih dipengaruhi oleh adanya LCOS ($p < 0,001$), terlepas dari penggunaan CPB. Faktor usia dan berat badan tidak berhubungan signifikan dengan kejadian LCOS maupun lama rawat ICU (semua $p > 0,05$).

Kesimpulan

Penggunaan CPB dalam operasi BCPS berhubungan dengan peningkatan risiko LCOS, yang kemudian memperpanjang lama rawat ICU. Namun, lama rawat ICU pada pasien BCPS lebih ditentukan oleh adanya LCOS, bukan oleh penggunaan CPB itu sendiri.

.....Introduction

The use of cardiopulmonary bypass (CPB) in bidirectional cavopulmonary shunt (BCPS) surgery in children can trigger low cardiac output syndrome (LCOS). Patients with LCOS are associated with prolonged intensive care unit (ICU) stays, placing them at higher risk of associated complications. Although CPB and LCOS factors have the potential to affect ICU stays, there has been no similar study in Indonesia evaluating this relationship in BCPS patients.

Method

This study utilized a retrospective cohort design with a sample of 109 patients (63 males, 44 females) who underwent BCPS surgery at Cipto Mangunkusumo Hospital from January 2019 to June 2024. Bivariate and multivariate analyses were used to evaluate the relationship between CPB use and other factors on the

incidence of LCOS and ICU length of stay.

Results

Patients who underwent BCPS without CPB had a reduced risk of developing LCOS (aOR = 0.29, 95% CI 0.11–0.77, $p < 0.05$). However, CPB was not a significant independent predictor of ICU length of stay ($p > 0.05$). ICU length of stay was more affected by the presence of LCOS ($p < 0.001$), regardless of CPB use. Age and weight factors were not significantly associated with either LCOS incidence or ICU length of stay (all $p > 0.05$).

Conclusion

The use of CPB in BCPS surgery is associated with an increased risk of LCOS, which subsequently prolongs ICU stay. However, the length of ICU stay in BCPS patients is more determined by the presence of LCOS, rather than CPB use itself.