

PNT-proBNP sebagai Prediktor terhadap sindrom curah jantung rendah pascabedah jantung terbuka pada pasien pediatrik = NT-proBNP as predictor for low cardiac output syndrome following cardiac surgery in pediatric patients

Vera Citra Setiawan Hoei, author

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Abstrak

Latar belakang: Sindrom curah jantung rendah (low cardiac output syndrome, LCOS) merupakan salah satu morbiditas yang terjadi pascaoperasi jantung terbuka. Angka kejadian LCOS pada pasien pascaoperasi sebanyak 25–65%, sehingga diperlukannya suatu penanda biologis praoperatif untuk menilai keadaan pembedahan yang optimal. NT-proBNP merupakan suatu biomarker yang berpotensi digunakan dalam diagnosis, tata laksana dan prognosis pada populasi pediatrik. Penelitian ini bertujuan untuk mengevaluasi peran NT-proBNP sebagai faktor prediktor terhadap kejadian LCOS pascabedah jantung terbuka.

Metode: Studi longitudinal dilakukan di Rumah Sakit Jantung dan Pembuluh Darah Harapan Kita dalam periode November 2018 hingga Maret 2020 dengan merekrut subjek di bawah usia 18 tahun yang menjalani operasi korektif kelainan jantung bawaan. Kadar NT-proBNP prabedah diambil dan dianalisis terhadap kejadian LCOS pascaoperasi.

Hasil: Terdapat 159 subjek dilibatkan sebagai subjek penelitian. Angka kejadian LCOS pascaoperasi sebanyak 23,9%. Median NT-proBNP prabedah berbeda bermakna antara pasien yang mengalami LCOS dengan pasien yang tidak mengalami LCOS (1592 pg/mL vs. 227 pg/mL; $p = 0,001$). Nilai cut-off NT-proBNP prabedah terhadap kejadian LCOS pascaoperasi adalah 400 pg/mL, dengan sensitivitas 78,95%, spesifisitas 64,46%, positive predictive value 41,10%, negative predictive value 90,70% dan diagnostic accuracy 67,92%.

Simpulan: NT-proBNP prabedah dapat dijadikan faktor prediktor terhadap kejadian LCOS pascaoperasi jantung terbuka. Nilai cut-off NT-proBNP prabedah terhadap luaran LCOS pascaoperasi adalah 400 pg/mL.

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Background: Low cardiac output syndrome (LCOS) is a common morbidity following open heart surgery in pediatric population. The incidence of postoperative LCOS range from 25 to 65%, indicating the needs for preoperative tool to evaluate optimum condition prior to surgery. NT-proBNP is a biomarker that has potential in diagnosis, management, and prognosis in pediatric population. This study aims to evaluate the role of NT-proBNP as predictive factor for LCOS following cardiac surgery.

Methods: A longitudinal study was conducted in Harapan Kita National Heart Center between November 2018 and March 2020. We recruited subjects below 18 years old who underwent corrective cardiac surgery. NT-proBNP was obtained preoperatively and analyzed for postoperative LCOS.

Results: A total of 159 subjects were enrolled. The incidence of postoperative LCOS was 23.9%. The median of preoperative NT-proBNP was found to be significantly higher in patients experiencing LCOS compared to that of patients without LCOS (1592 pg/mL vs. 227 pg/mL; $p = 0.001$). The cut-off value for preoperative NT-proBNP to determine postoperative LCOS was 400 pg/mL with sensitivity of 78.95%, specificity of 64.46%, positive predictive value of 41.10%, negative predictive value of 90.70% and diagnostic accuracy of 67.92%.

Conclusions: Preoperative NT-proBNP can be used as predictor for postoperative LCOS following cardiac surgery. The cut-off value of preoperative NT-proBNP in determining postoperative LCOS was found to be 400 pg/mL.