

INTISARI

Latar belakang: *Hemodynamically significant patent ductus arteriosus (hsPDA)* pada bayi kurang bulan berisiko menimbulkan berbagai komplikasi. Pemberian terapi parasetamol bisa menurunkan morbiditas dan mortalitas *hsPDA*. Evaluasi kondisi anatomis dan hemodinamik *PDA* pasca medikasi dapat dilakukan dengan ekokardiografi, tetapi pemeriksaan ini memerlukan alat dan keahlian khusus. *Near infrared spectroscopy (NIRS)* bisa mengukur saturasi oksigen regional renal (*rRSO₂*) yang menggambarkan keseimbangan hantaran dan konsumsi oksigen di jaringan secara non invasif dan *real time*. Penggunaan *rRSO₂* dapat menjadi alternatif ekokardiografi untuk mendiagnosis perbaikan *hsPDA* pasca pemberian terapi.

Tujuan: Penelitian ini bertujuan untuk mengetahui nilai diagnostik *rRSO₂* yang diperiksa dengan NIRS pada perbaikan *hsPDA*.

Metode: Penelitian dilakukan secara potong lintang pada 37 bayi kurang bulan <37 minggu yang terdiagnosis *hsPDA* secara klinis dan dikonfirmasi dengan ekokardiografi serta mendapatkan terapi parasetamol di RSUP Dr. Sardjito pada Oktober 2023 hingga April 2024. Analisis dilakukan dengan membuat kurva *receiver operating characteristic (ROC)*, menilai *area under curve (AUC)*, dan menentukan nilai referensi optimal. Analisis performa *rRSO₂* dibandingkan dengan ekokardiografi menggunakan tabel kontingensi.

Hasil: Perbaikan *hsPDA* didapati pada 19 dari 37 subyek penelitian (51%). Saturasi oksigen regional renal dengan nilai referensi $\geq 54\%$ memiliki *AUC* 0,749 (IK 95% 0,586 – 0,912). Pada 72 jam terapi, *rRSO₂* dengan titik potong 54% memiliki sensitivitas 63,16% dan spesifitas 88,33%.

Simpulan: Saturasi oksigen regional renal memiliki nilai diagnostik yang cukup baik dan dapat dijadikan metode alternatif untuk mendiagnosis perbaikan *hsPDA* pasca terapi parasetamol pada bayi kurang bulan.

Kata kunci: saturasi renal, NIRS, *hsPDA*, parasetamol

ABSTRACT

Background: Hemodynamically significant patent ductus arteriosus (hsPDA) in premature infants can lead to various complications. Paracetamol has been shown to reduce the morbidity and mortality of hsPDA. Echocardiography is the method of choice to assess anatomical condition and its hemodynamic significance, but echocardiography requires special equipment and expertise. Near infrared spectroscopy (NIRS) is a non-invasive device to measure regional renal oxygen saturation (rRSO₂), which reflects the balance of oxygen delivery and consumption. Renal regional oxygen saturation may be useful as an alternative method in evaluating the hemodynamic condition of hsPDA after the treatment course.

Objective: This study aimed to analyze the diagnostic value of rRSO₂ measured by NIRS in improvement of hsPDA.

Methods: A cross-sectional study was conducted on 37 premature infants born <37 weeks with hsPDA diagnosed clinically and confirmed by echocardiography, who received paracetamol at Dr. Sardjito General Hospital from October 2023 to April 2024. Analysis was performed by creating receiver operating characteristic (ROC) curves, assessing the area under the curve (AUC), and determining the optimal cut-off value. Contingency table of rRSO₂ and echocardiography was used to analyze the diagnostic performance of the test.

Results: The improvement of hsPDA was found in 19 out of 37 premature infants (51%). Renal RSO₂ had a fair diagnostic value to detect improvement of hsPDA after treatment. The cut-off value of $\geq 54\%$ had an AUC of 0.749 (95% CI 0.586 – 0.912) with sensitivity of 63.16% and specificity of 88.33% at 72 hours.

Conclusion: Renal regional oxygen saturation can be used as an alternative method to assess improvement in premature infants with hsPDA after paracetamol administration.

Keywords: renal saturation, NIRS, hsPDA, paracetamol