

HUBUNGAN DERAJAT KEPARAHAN PADA *PEDIATRIC ACUTE RESPIRATORY DISTRESS SYNDROME* (PARDS) MENGGUNAKAN *OXYGEN INDEX* (OI) DENGAN PERFUSI SEREBRAL MENGGUNAKAN *NEAR-INFRARED SPECTROSCOPY* (NIRS)

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INTISARI

Latar belakang: *Pediatric Acute Respiratory Distress Syndrome* (PARDS) dapat menyebabkan cedera otak akut melalui, inflamasi, hipoksemia dan efek samping ventilasi mekanis. *Near-infrared spectroscopy* (NIRS) merupakan metode non-invasif untuk memantau saturasi oksigen serebral, namun belum banyak diteliti pada PARDS.

Tujuan: Penelitian ini bertujuan untuk mengevaluasi hubungan derajat keparahan PARDS menggunakan *Oxygen Index* (OI) dengan perfusi serebral menggunakan NIRS.

Metode: Sebuah studi analitik observasional dengan desain potong lintang dilakukan di PICU RSUP Dr. Sardjito Yogyakarta pada bulan Mei-Oktober 2024. Subjek penelitian adalah pasien anak berusia 1 bulan - <18 tahun yang terdiagnosis PARDS sesuai kriteria PALICC-2. Variabel yang diteliti meliputi derajat PARDS dan nilai perfusi serebral NIRS (CrSO₂). Variabel luar yang diteliti meliputi derajat PARDS, nilai perfusi serebral NIRS (CrSO₂), *Temperature* (T), MAP, Penggunaan vasopressor, kadar Hb, *balance* cairan kumulatif, pH, pCO₂, pO₂ dan FTOE.

Hasil: Dari 21 pasien PARDS, tidak ada perbedaan signifikan CrSO₂ antara kelompok *Mild/Moderate* PARDS (72,25 ± 17,54) dan *Severe* PARDS (65,89 ± 19,30), (p=0,440). Tidak ada perbedaan signifikan CrSO₂ antara kelompok *Temperature* (p=0,485), MAP (p=0,734) maupun Penggunaan vasopressor (p=0,307). Tidak ditemukan korelasi signifikan antara kadar Hb, *balance* cairan kumulatif, pH, pCO₂, dan pO₂ dengan CrSO₂ (p>0,05). Terdapat perbedaan signifikan CrSO₂ di antara kelompok FTOE (p<0,001).

Kesimpulan: Tidak ada hubungan signifikan antara derajat PARDS dengan perfusi serebral NIRS, namun terdapat perbedaan signifikan CrSO₂ antar kelompok FTOE.

Kata kunci: *Pediatric Acute Respiratory Distress Syndrome*, *Near-Infrared Spectroscopy*, perfusi serebral NIRS, *Oxygen Index*, *Fractional Tissue Oxygen Extraction*.

RELATIONSHIP BETWEEN SEVERITY IN PEDIATRIC ACUTE RESPIRATORY DISTRESS SYNDROME (PARDS) USING OXYGEN INDEX (OI) AND CEREBRAL PERFUSION USING NEAR-INFRARED SPECTROSCOPY (NIRS)

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REFERENCE

Background: *Pediatric Acute Respiratory Distress Syndrome (PARDS)* can cause acute brain injury through inflammation, hypoxemia and side effects of mechanical ventilation. *Near-infrared spectroscopy (NIRS)* is a non-invasive method to monitor cerebral oxygen saturation, but has not been widely studied in PARDS.

Objective: This study aimed to evaluate the relationship of PARDS severity using Oxygen Index (OI) with cerebral perfusion using NIRS.

Methods: A cross-sectional design analytic study was conducted in the PICU of Dr. Sardjito Hospital, Yogyakarta from May to October 2024. The subjects were pediatric patients aged 1 month - <18 years who were diagnosed with PARDS according to PALICC-2 criteria. The variables studied include the degree of PARDS and NIRS cerebral perfusion value (CrSO₂). External variables studied include Temperature (T), MAP, use of vasopressor, Hb level, cumulative fluid balance, PH, pCO₂, pO₂ and FTOE.

Hasil: Of the 21 PARDS patients, there was no significant difference in CrSO₂ between the Mild/Moderate PARDS (72.25 + 17.54) and Severe PARDS (65.89 + 19.30) groups, (p=0.440). There was no significant difference in CrSO₂ between the Temperature group (p=0.485), MAP (p=0.734) or the use of vasopressor (p=0.307). No significant correlation was found between Hb level, cumulative fluid balance, pCO₂, and pO₂ with CrSO₂ (p>0,05). There was a significant difference in CrSO₂ between the FTOE groups (p<0.001).

Kesimpulan: There is no significant relationship between the degree of PARDS and NIRS cerebral perfusion, but there is a significant difference in CrSO₂ between FTOE groups.

Kata kunci: *Pediatric Acute Respiratory Distress Syndrome, Near-Infrared Spectroscopy, NIRS cerebral perfusion, Oxygen Index, Fractional Tissue Oxygen Extraction.*