Pemantauan duktus arteriosus signifikan hemodinamik pada bayi dengan usia gestasi < 32 minggu menggunakan Near-Infrared Spectroscopy (NIRS): Studi pendahuluan = Monitoring of hemodynamically significant hemodynamic patent ductus arteriosus in very preterm infant < 32 weeks using cerebral, abdominal, and renal near infrared spectroscopy (NIRS): a pilot study

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Abstrak

Latar belakang: Duktus arteriosus persisten signifikan hemodinamik (DAPsh) ditandai dengan peningkatan aliran darah paru dan penurunan aliran darah sistemik. Hipoperfusi sitemik yang menyebabkan penurunan oksigenasi jaringan dapat dideteksi menggunakan near-infrared spectroscopy (NIRS) yang dipasang di area serebral, renal, dan abdomen.
Tujuan: Mencari nilai diagnsotik dari NIRS serebral, renal, dan abdominal dalam mendeteksi dini DAPsh pada bayi <32 minggu.
Metode: Sebanyak 43 subjek bayi prematur dilakukan pemantauan dengan memasang NIRS serebral, renal, dan abdomen pada 3 jam pertama selama 72 jam. Semua subjek dilakukan pemeriksaan dengan ekokardiografi dalam 24 jam pertama untuk menilai adanya DAPsh. Kriteria ekokardiografi yang digunakan termasuk parameter oversirkulasi paru dan pola aliran doppler di serebral, renal, dan abdominal. Nilai rerata dari NIRS selama 72 jam dibandingkan antara kelompok DAPhs dan non-DAPhs.
Hasil: Terdapat 10 subjek dengan DAPsh dan 33 subjek tanpa DAPsh. Median dari nilai RrSO2 pada kelompok dengan DAPsh lebih rendah dibanding kelompok tanpa DAPsh, 72 (44-87) vs 78 (48-89) (p=0,044). Dengan menggunakan kurva ROC, nilai titik potong < 74% memiliki sensitivitas sebesar 80% dan spesifisitas sebesar 70%. Sedangkan nilai CrSO2 dan SrSO2 tidak bermakna secara statistik.
Simpulan: Nilai RrSO2 < 74% dapat memprediksi adanya DAPsh pada bayi <32 minggu.
.....Background: Hemodynamically significant patent ductus arteriosus (hsPDA) is characterised by systemic hypoperfusion and pulmonary overcirculation. Systemic hypoperfusion with subsequent decrease of tissue oxygenation can be detected using near-infrared spectroscopy (NIRS) applied at the cerebral, renal, and abdominal areas.
Objective: To seek the diagnostic value of cerebral, renal, and splanchnic NIRS to detect hsPDA in infants < 32 weeks of gestation.
Methods: Forty-three very preterm infants (birth weight <1500 gr and gestational age <32 weeks) were monitored continuously with cerebral, renal, and abdominal NIRS within three hours after birth for 72 hours. All infants were prospectively evaluated using echocardiography to detect hsPDA within 24 hours after birth daily during the NIRS application. Echocardiography criteria to diagnose hsPDA included indices of pulmonary overcirculation and organ Doppler pattern at cerebral, renal, and splanchnic. The mean value of regional NIRS during its application was compared between the hsPDA and no- hsPDA groups.
Results: Of 43 infants, there were 10 infants with hsPDA and 33 with no hsPDA. A lower median of mean RrSO2 was noted in hsPDA groups compared to no-hsPDA groups, 72 (44-87) vs 78 (48-89), respectively (p=0.044), while no significant difference was found in CrSO2 and SrSO2. Using ROC curves, Mean

RrSO2 < 74% identified an hsPDA with a sensitivity of 80% and specificity of 70%, while CrSO2 and SrSO2 were not significant

Conclusion : Low RrSO2 <74% was associated with the presence of hsPDA in infants < 32 weeks of gestation.