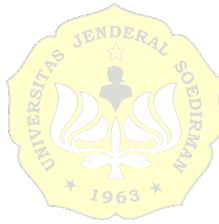


ABSTRAK

Latar Belakang: Tingkat mortalitas dari cedera otak traumatik (COT) dapat berkurang apabila cedera iskemia serebral dapat dicegah dan oksigenasi otak dipertahankan. Kraniotomi pada COT memerlukan manajemen anestesi yang optimal, dan dexmedetomidine semakin banyak digunakan untuk efek neuroprotektifnya. **Tujuan:** Mengetahui efektivitas dexmedetomidine terhadap saturasi regional otak (rSO₂) pada pasien COT yang menjalani pembedahan. **Metode:** Uji acak terkontrol melibatkan 28 pasien COT pasca pembedahan di RSUD Prof. Dr. Margono Soekarjo yang memenuhi kriteria inklusi. Subjek diacak ke dalam kelompok intervensi yang mendapatkan dexmedetomidine 0.3 mcg/kg/jam dan kelompok kontrol yang mendapatkan sufentanil 0.2 mcg/kgBB. Nilai rSO₂ diukur sebelum, 1 jam, dan 2 jam setelah operasi menggunakan *near-infrared spectroscopy* (NIRS). **Hasil:** Karakteristik dasar subjek kedua kelompok ditemukan serupa. Nilai rSO₂ 1 jam ($65,21 \pm 8,53\%$ vs $55,57 \pm 10,97\%$; $p=0,015$) dan 2 jam post-operasi ($68,42 \pm 7,91\%$ vs $58,85 \pm 4,62\%$; $p<0,001$) pada kelompok dexmedetomidin secara signifikan lebih tinggi dibandingkan kelompok sufentanil. Pemberian dexmedetomidin menghasilkan peningkatan rSO₂ yang signifikan pada setiap waktu pengukuran, dibandingkan sufentanil yang menghasilkan peningkatan signifikan pada 2 jam postoperasi. **Kesimpulan:** Pasien COT yang mendapatkan dexmedetomidine memiliki nilai rSO₂ signifikan lebih tinggi pada pengukuran 1 jam dan 2 jam pasca pembedahan serta menunjukkan peningkatan nilai rSO₂ yang signifikan pada tiap waktu pengukuran dibandingkan pasien yang mendapatkan sufentanil.

Kata Kunci : Cedera otak traumatik, rSO₂, NIRS, dexmedetomidine, sufentanil



ABSTRACT

Background: The mortality rate of traumatic brain injury (TBI) can be reduced if cerebral ischemic injury is prevented and adequate brain oxygenation is maintained. Craniotomy in TBI requires optimal anesthetic management, and dexmedetomidine is increasingly used for its neuroprotective effects.

Objective: To evaluate the effectiveness of dexmedetomidine on regional cerebral oxygen saturation (rSO_2) in TBI patients undergoing surgery. **Methods:** A randomized controlled trial involving 28 post-surgical TBI patients at Prof. Dr. Margono Soekarjo General Hospital who met the inclusion criteria. Subjects were randomly assigned to an intervention group receiving dexmedetomidine at 0.3 mcg/kg/h and a control group receiving sufentanil at 0.2 mcg/kgBW. rSO_2 values were measured before, 1 hour, and 2 hours after surgery using near-infrared spectroscopy (NIRS). **Results:** Baseline characteristics were similar between groups. rSO_2 values at 1 hour ($65.21 \pm 8.53\%$ vs. $55.57 \pm 10.97\%$; $p=0.015$) and 2 hours postoperatively ($68.42 \pm 7.91\%$ vs. $58.85 \pm 4.62\%$; $p<0.001$) were significantly higher in the dexmedetomidine group compared to the sufentanil group. Dexmedetomidine administration resulted in a significant increase in rSO_2 at all time points, whereas sufentanil showed a significant increase only at 2 hours postoperatively. **Conclusion:** In patients with traumatic brain injury (TBI), administration of dexmedetomidine was associated with significantly higher rSO_2 values at 1 hour and 2 hours postoperatively. Furthermore, these patients demonstrated a consistent and significant increase in rSO_2 values across all measurement time points compared to those who received sufentanil.

Keywords: Traumatic Brain Injury, rSO_2 , NIRS, dexmedetomidine, sufentanil

