

Aplikasi TCI rumusan marsh pada pasien geriatri ras melayu di RSUPN Cipto Mangunkusumo : perbandingan konsentrasi plasma dan effect site propofol dengan dan tanpa premedikasi fentanil = The application of TCI with marsh pharmacodynamics for geriatric patients in Cipto Mangunkusumo Hospital : a comparison of plasma and effect site concentration with and without the premedication of fentanyl

Kamilah Muhammad Hafidz, author

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Abstrak

Latar belakang. Teknik Target Controlled Infusion untuk anestesia umum semakin banyak digunakan. Jumlah pasien geriatri yang harus menjalani prosedur operasi semakin bertambah, serta memerlukan pertimbangan khusus mengingat risiko operasi dan pembiusan yang lebih tinggi pada golongan ini. Penelitian ini bertujuan untuk membandingkan konsentrasi plasma (Cp) dan konsentrasi effect site (Ce) propofol menggunakan rumusan Marsh pada pasien geriatri ras Melayu di RSCM dengan dan tanpa pemberian premedikasi fentanil.

Metode. Empat puluh pasien geriatri orang Indonesia Asli status fisik ASA 2, usia > 60 tahun dan BMI 18-30 kg/m² dirandomisasi. Satu kelompok (20 pasien) mendapatkan Fentanil-Propofol, lainnya (20 pasien) mendapatkan NaCl-Propofol. Pemberian propofol menggunakan TCI rumusan Marsh dengan target konsentrasi plasma. Target Cp dimulai dari 1 µ/ml dinaikkan 1 µ/ml tiap menit sampai tercapai loss of consciousness (LoC) dan diteruskan sampai nilai BIS 45-60 selama 5 menit (steady state).

Hasil. Pada kelompok Fentanil-Propofol saat LoC didapatkan Cp 3,15+0,35 µ/ml dan Ce 1,53+0,53 µ/ml dan saat BIS stabil didapatkan Cp 4,14+0,59 µ/ml dan Ce 2,63+0,60 µ/ml. Pada kelompok NaCl-Propofol saat LoC didapatkan Cp 4,20+0,61 µ/ml dan Ce 2,26+0,56 µ/ml dan saat BIS stabil didapatkan Cp 4,78+0,38 µ/ml dan Ce 3,30+0,52 µ/ml. Pasien-pasien yang mendapatkan fentanil terlebih dahulu memiliki Cp dan Ce yang lebih rendah baik saat LoC maupun saat nilai BIS stabil (P < 0,05).

Kesimpulan. Terdapat perbedaan bermakna antara Cp dan Ce propofol yang diberikan premedikasi fentanil dan yang tidak.

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Background. The application of Target Controlled Infusion (TCI) technique in general anesthesia is progressively growing. Number of geriatric patients scheduled for operations increases every year, while this group needs special consideration following the higher risk of surgery and anesthesia. The purpose of our study was to compare the estimated plasma concentration (Cp) and the effect site concentration (Ce) of propofol using Marsh pharmacokinetic model for geriatric patients in Cipto Mangunkusumo Hospital with and without the administration of fentanyl premedication.

Methods. Forty patients, physical status ASA 2, aged > 60, BMI 18-30 kg/m² randomly assigned to a fentanyl-propofol group or a saline-propofol group. TCI propofol was initiated using Marsh pharmacokinetic model. Initial plasma concentration in each group was 1 µ/ml and increased by 1 µ/ml every minute until there was no eyelash reflex, which defined as loss of consciousness (LoC). Propofol plasma concentration was increased and decreased to reach a stable BIS value between 45-60, considered as Cp and Ce at steady state.

Results. In the fentanyl-propofol group the estimated Cp at loss of consciousness was $3,15 \pm 0,35 \mu\text{/ml}$ and Ce $1,53 \pm 0,53 \mu\text{/ml}$. At steady state, Cp was $4,14 \pm 0,59 \mu\text{/ml}$ and Ce $2,63 \pm 0,60 \mu\text{/ml}$. In the saline-propofol group Cp $4,20 \pm 0,61 \mu\text{/ml}$ and Ce $2,26 \pm 0,56 \mu\text{/ml}$. At steady state, Cp was $4,78 \pm 0,38 \mu\text{/ml}$ and Ce $3,30 \pm 0,52 \mu\text{/ml}$. The estimated Cp and Ce in the fentanyl-propofol group were lower than saline-propofol group ($p < 0.05$).

Conclusion. There is a significant difference between Cp and Ce in the salinepropofol group and fentanyl-propofol group.