

Sevoflurane concentration for cannulation in developmental disabilities

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論 文 名 : Sevoflurane concentration for cannulation in developmental disabilities
(発達障害におけるカニューレーションのためのセボフルラン濃度)

区 分 : 甲

論 文 内 容 の 要 旨

Objective : The goal of this study was to compare the end-tidal sevoflurane concentration and time for intravenous cannulation at induction of anesthesia using sevoflurane with or without nitrous oxide in healthy children and in those with developmental disabilities.

Methods : Normal and developmentally disabled children were anesthetized by inhalation of sevoflurane with nitrous oxide or with nitrous oxide-free oxygen, and intravenous cannulae were introduced. Nitrous oxide was stopped after loss of consciousness. The following parameters were recorded for each patient: age, gender, height, weight, BMI, duration of intravenous cannulation, end-tidal concentration of sevoflurane at the completion of intravenous cannulation, and use of nitrous oxide.

For each parameter except gender, p -value were calculated by one-way analysis of variance (ANOVA). For gender, p -value were calculated using the Fisher method. Two-way ANOVA was performed to evaluate the effect of patient health status and nitrous oxide use on the end-tidal concentrations of sevoflurane and the time required for intravenous cannulation.

Results : The end-tidal sevoflurane concentrations at the completion of the intravenous cannulation had received a significant main effect of the factor "the use of nitrous oxide" ($F(1,166) = 25.8, p < 0.001, \eta^2 = 0.13$) and a small effect of the factor "the patient health status" ($F(1,166) = 0.259, p = 0.611, \eta^2 = 0.001$). However, the time required for intravenous cannulation was not significantly affected by either of the two factors, "the use of nitrous oxide" ($F(1,166) = 0.454, p = 0.501, \eta^2 = 0.003$) and "the patient health status" ($F(1,166) = 0.308, p = 0.579, \eta^2 = 0.002$).

Conclusions : Between the healthy children and the children with developmental disabilities, no significant differences in the time required for the intravenous cannulation from the beginning of anesthetic induction. However, the end-tidal sevoflurane concentrations at the completion of the intravenous cannulation was significantly different. Sevoflurane in alveoli might be diluted by nitrous oxide.