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🌐 Development of a risk predictive score for intraoperative hypothermia in pediatric patients: a retrospective cohort study

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We use this protocol and it's working.

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Abstract

Objective: This study aims to identify the risk factors and develop a risk predictive score of intraoperative hypothermia in pediatric surgery.

Methods: This was a retrospective cohort study of children under the age of 12 years who underwent anesthesia in 2020 at a super-tertiary care hospital, Thailand. Those with one episode of body temperature 32–35°C or 35.1–35.9°C were defined as having mild and very mild hypothermia, respectively. Data, including patient demographics, clinical information, and perioperative data, were extracted from the hospital information system and were analyzed to identify potential risk factors of hypothermia. The variables associated with intraoperative hypothermia at a p-value <0.2 then were included in the multinomial logistic regression analysis between the two outcomes (mild and very mild hypothermia) (relative risk ratio [RRR] and 95% confidence interval [CI]). The predictors of mild hypothermia were included in the multivariate logistic regression analysis where the association of each risk factor was presented as an odd ratio (OR) and 95% CI

Results:

Among the 940 eligible patients, 163 (17.34%) and 34 (3.62%) experienced intraoperative very mild and mild hypothermia, respectively. On multivariate analysis, intraoperative very mild hypothermia was associated with ASA physical status >3 (RRR: 6.4[2.9, 14.5]), anesthetic time >2 hours (RRR:2.6[1.8, 3.8]), and major operation (RRR: 2.0[1.2, 3.4]) whereas intraoperative mild hypothermia was associated with ASA physical status >3 (adj OR: 8.01[3.13,20.5]), preoperative temperature >37.2°C (adj OR:3.3[1.5, 7.4]), anesthetic time >2 hours (adj OR:3.1[1.3, 7.4]), and no active warming (adj OR:9.3[2.9, 29.8]). A risk predictive score of mild hypothermia using a cut-point of 1.0 had a sensitivity and specificity of 85.9% and 52.53% respectively, with an area under the receiver operating characteristic curve of 0.78.

Conclusions: Application of forced-warming after prolonged anesthesia, especially in high morbidity child, can reduce the risk of intraoperative hypothermia during pediatric surgery.

Objective

- 1 This study aims to identify the risk factors and develop a risk predictive score of intraoperative hypothermia in pediatric surgery.

Method

- 2 This was a retrospective cohort study of children under the age of 12 years who underwent anesthesia in 2020 at a super-tertiary care hospital, Thailand.
 - 2.1 Those with one episode of body temperature 32-35°C or 35.1-35.9°C were defined as having mild and very mild hypothermia, respectively.
 - 2.2 Data, including patient demographics, clinical information, and perioperative data, were extracted from the hospital information system and were analyzed to identify potential risk factors of hypothermia.
 - 2.3 The variables associated with intraoperative hypothermia at a p-value <0.2 then were included in the multinomial logistic regression analysis between the two outcomes (mild and very mild hypothermia) (relative risk ratio [RRR] and 95% confidence interval [CI]).
 - 2.4 The predictors of mild hypothermia were included in the multivariate logistic regression analysis where the association of each risk factor was presented as an odd ratio (OR) and 95% CI
 - 2.5 A risk predictive scoring system was developed using the predictors derived from the final multivariate logistic regression model. The score of each predictor was derived from the coefficient and rounded to the nearest integer to obtain a maximum score of 10. In the final model, each predictor score was summarized for predicting intraoperative hypothermia. The performance of the final model was assessed using the area under the ROC curve (AUC).