

Preoperative percutaneous oxygen saturation is a predictor of postoperative adverse events after Ebstein's anomaly reconstruction

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Abstract

Background Ebstein's anomaly (EA) is a kind of congenital heart disease, which is currently widely treated by cone reconstruction. However, prediction of postoperative recovery is still challenging. Methods A retrospective analysis was performed on EA cases undergoing cone reconstruction from January 2010 to January 2016. Univariate and multivariate logistic regression analyses were performed, with postoperative adverse events defined as dependent variable and pre- and intra-operative parameters defined as independent variables. Predictive capacity of preoperative SPO₂ and Great Ormond Street (GOS) score was evaluated using areas under the curve of receiver operating characteristic (ROC). Results Preoperative SPO₂ was $95.7 \pm 5.20\%$. Cardiopulmonary bypass, aortic cross-clamp, postoperative mechanical ventilation, and hospitalization time were 101.7 ± 28.26 min, 60.9 ± 18.04 min, 16 hours (8, 22), and 8 days (7, 11), respectively. The incidence of total postoperative adverse events including low cardiac output syndrome, mechanical ventilation more than 3 days, postoperative hospitalization more than 2 weeks, postoperative re-intubation, extracorporeal membrane oxygenation assistance, and death was 13.1% (n=13). Low pre-operative SPO₂ (P=0.001, OR=0.834), GOS score (P=0.021, OR=0.368), and cardiopulmonary bypass time (P=0.034, OR=1.021) were risk factors for adverse events. Multivariate logistic regression analysis showed that low preoperative SPO₂ (P=0.002, OR=0.846) and GOS score (P=0.043, OR=0.577) were independent risk factors for adverse events. The areas of SPO₂ and GOS score under the ROC curve were 0.764 and 0.740, respectively. Conclusions Low pre-operative SPO₂ and GOS score were predictors of adverse events after cone reconstruction, and SPO₂ was more convenient and objective than GOS score.

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