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Letter to the Editor

Reply to: Comment on “Usefulness of cerebral rSO₂ monitoring during CPR to predict the probability of return of spontaneous circulation”



Dear Editor,

We greatly appreciate the comments by Yarong He et al. implying that the significance of correlation between ΔrSO_2 and ROSC might depend on the causes of CA, therefore stratification analysis by cause of CA may verify the prognostic effects of ΔrSO_2 for ROSC. In the study cohort, reasons for CA were summarized as follows: 7 patients with aortic dissection, 6 patients with drowning, and 5 patients with asphyxiation (Table 1). Because of many strata of CA reasons, it is difficult to convey a meaningful analysis within each stratum of CA reason. In addition, in our paper, we rather focus on the adding predictive ability of the amount of change in the maximum value from the baseline value at 16 min; and that the combination of baseline rSO₂ value with the amount of maximum rise from the baseline rSO₂ value during cardiopulmonary resuscitation might be a new prognostic index for the prediction of the return of spontaneous circulation

(ROSC) in out-of-hospital cardiac arrest. The regression analysis we employed has brought enough complexity by including the interaction term which corresponds to the combination of two risk factors, and stratification analysis may harm stability of the analytical results due to overfitting.

We also previously reported Stanford type A aortic dissection and stone heart (non-sonographic cardiac activity on hospital arrival) as causes of cardiopulmonary arrest (CPA) for which ROSC cannot be achieved.¹ In that study, however, cerebral infarction did not appear to be a cause of CPA for which ROSC was not achieved. The present study included six patients with cerebrovascular disease as the cause of CPA (Table 1: SAH 4 patients; ICH 2 patients). This finding did not meaningfully affect our results. The predictive factor for the probability of achieving ROSC was the amount of maximum rise according to the baseline rSO₂ value on hospital arrival in our study. We did not discuss the probability of ROSC according to the cause of CPA because its cause was unknown on hospital arrival.

Table 1 – Causes of cardiopulmonary arrest.

Cause	N
Aortic dissection	7
Hanging	7
Drowning/hypoxemia	6
Asphyxiation/hypoxemia	5
SAH	4
Aortic rupture	2
Pneumonia/hypoxemia	3
Fatal arrhythmia	3
ACS	2
DVT-PE	2
ICH	2
Intestinal infarction	2
HCC	1
Drug overdose	1
Hyperkalemia	1
Burn	1
Unknown	41

ACS: acute coronary syndrome, DVT-PE: deep venous thrombosis-pulmonary embolism, HCC: hepatocellular carcinoma, SAH: subarachnoid hemorrhage, ICH: intracranial hemorrhage.

Conflict of interest

None.

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