OP-13
Predictive role of QTc prolongation in carbon monoxide poisoning–related delayed neuropsychiatric sequelae

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Objective: Delayed neuropsychiatric sequelae (DNS) are serious complications of carbon monoxide (CO) poisoning that adversely affect poisoned patients' quality of life as well as socioeconomic status. This study aimed to determine clinical predictors of DNS in patients with CO poisoning.

Methods: This retrospective study included all CO-poisoned patients admitted to the emergency department (ED) of Linkou Chang Gung Memorial Hospital in Taiwan from 1 January 2009 to 31 December 2015. The medical records of all patients with CO poisoning were carefully reviewed, and relevant data were abstracted into a standardised form. Univariate and multivariate logistic regression models were used to identify predictors of DNS after CO poisoning. Receiver operating characteristic (ROC) curve analysis was used to determine the ideal cut-off value for continuous variables that predict the development of DNS.

Results: A total of 760 patients with CO poisoning were identified during the study period. Among them, 466 were eligible for the analysis of predictors of DNS. In multivariate analysis, a Glasgow Coma Scale <9 (odds ratio [OR], 2.74; 95% confidence interval [CI], 1.21–6.21), transient loss of consciousness (OR, 3.59; 95% CI, 1.31–9.79), longer delay from CO exposure to ED presentation (OR, 1.05; 95% CI, 1.03–1.08), and corrected QT (QTc) prolongation (OR, 2.61; 95% CI, 1.21–5.61) were found to be associated with a higher risk of DNS. The area under the ROC curve (AUC) for QTc interval measured within 6 h post-exposure best predicted the development of DNS, with a result of 0.729 (95% CI 0.660–0.791). Moreover, the best cut-off value of the QTc interval was 471 ms, with a sensitivity of 53.3% and a specificity of 85.1%.

Conclusion: We identified several potential predictors of DNS following CO poisoning. Among them, QTc prolongation found within 6 h post exposure is a novel predictor of DNS, which may be helpful in the future care of patients with CO poisoning.