

High serum cortisol level is associated with early postoperative cognitive dysfunction after coronary artery bypass graft surgery

Abstract

Background: The pathophysiology of postoperative cognitive dysfunction (POCD) remains poorly understood. It had been found that high serum cortisol level was associated with increased risk of postoperative delirium and that delirium was closely related to the occurrence of POCD. The purpose of this study is to investigate the relationship between serum cortisol level and early POCD in patients undergoing coronary artery bypass graft (CABG) surgery.

Methods: One hundred and sixty-eight adult patients who underwent elective CABG surgery were consecutively enrolled. Delirium was assessed using Confusion Assessment Method for the Intensive Care Unit during the first seven postoperative days. A neuropsychological test battery that included 7 tests with 9 subscales was administered one day before surgery and one week after surgery. POCD was defined using the same definition that was used in the ISPOCD1 study. Blood samples were obtained on the first postoperative day for measurement of serum cortisol concentration. Multivariate Logistic regression analyses were performed to identify predictors of POCD.

Results: Cognitive dysfunction occurred in 40.5% (68 of 168) of patients one week after surgery. High serum cortisol level was significantly associated with the occurrence of early POCD (odds ratio 2.352, 95% confidence interval 1.047 to 5.286, $P = 0.038$). Other independent predictors of early POCD included use of penehyclidine as premedication and prolonged duration of postoperative coma or delirium.

Conclusions: POCD was a common complication early after CABG surgery. High serum cortisol level on the first day after surgery was significantly associated with increased risk of early POCD.