

## CORTISOL LEVELS AND NEUROPSYCHIATRIC DIAGNOSIS AS MARKERS OF POSTOPERATIVE DELIRIUM

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**Introduction:** Delirium affects 11% to 47% of post-operative cardiac surgery patients and is associated with higher mortality and morbidity rates. However, the pathophysiology of this syndrome is largely unknown.

**Objectives:** To investigate whether increased concentration of pre- and postoperative plasma cortisol predicts the development of delirium after coronary artery bypass graft surgery (CABG). Secondly, to assess whether the association between cortisol and delirium is stress-related or mediated by other pathologies, such as major depressive disorder (MDD) or cognitive impairment.

**Methods:** The patients were examined one day preoperatively with Mini International Neuropsychiatric Interview and Montreal Cognitive Assessment to screen for depression and cognitive impairment, respectively. Blood samples for cortisol levels were collected both pre- and post-operatively. The Confusion Assessment Method was used within the first five days post-operatively to screen for a diagnosis of delirium.

**Results:** Postoperative delirium developed in 36% (41 of 113) of participants. Multivariate logistic regression analysis revealed two groups independently associated with an increased risk of developing post-operative delirium:

- 1) Those with pre-operatively raised cortisol levels and
- 2) Those with a pre-operative diagnosis of MDD associated with raised levels of cortisol post-operatively. According to ROC analysis the most optimal cutoff values of the preoperative and postoperative cortisol concentration which predict the development of delirium were 353.55 nmol/L, and 994.10 nmol/L, respectively.

**Conclusion:** Raised peri-operative plasma cortisol concentrations are associated with delirium after CABG surgery. This may be an important pathophysiological consideration in the increased risk of post-operative delirium seen in patients with a pre-operative diagnosis of MDD.