Hemodynamic changes during general anesthesia and its implications on neurognitive function

Marcela P Vizcaychipi
Chelsea & Westminster University Hospital, UK

Cognitive dysfunction in the perioperative period and long term memory deficits are devastating complications frequently observed in older patients requiring major surgical interventions. Continuous cardiovascular monitoring is a common clinical practice in anesthesia and it is a key component of goal directed therapy guidelines for the management of the high-risk surgical patient. We have demonstrated transient increased in heart rate and cardiac output and a decreased in mean arterial blood pressure following induction of anesthesia in young healthy patients undergoing general anesthesia for elective orthopedic surgeries. These findings may affect end organ function which correlates with depth of anesthesia. The magnitude of change in depth of anesthesia could be due to cortical depression by propofol but the reduction in MAP could potentially be a cofounding factor associated to the integrity of the autonomic nervous system. The fall in MAP may contribute to a reduction in cerebral perfusion pressure (CPP). MAP and intracranial pressure (ICP) are both parameters required to calculate the CPP (CPP = MAP – ICP). The fall in MAP may count towards a decrease in CPP and contributed to further cortical depression. These combined effects of propofol and significant hemodynamic changes after induction of anesthesia in healthy young patients undergoing surgery under general anesthesia further emphasizes the need to monitor such changes prior to and during induction of anesthesia. BIS levels of <40 have been associated with post-operative cognitive decline and delirium, especially in the elderly.

m.vizcaychipi@imperial.ac.uk

The role of NTproBNP in predicting prognosis and cardiovascular events in patients with heart failure

Adriana Tamburello, Federica Ricupati and Salvatore Novo
University of Palermo, Italy

Background: The role of Nterminal pro brain natriuretic peptide (NTproBNP) to stratify risk in patients with heart failure (HF) has been analyzed. NT-proBNP levels are increased in HF, and well correlated with ventricular wall stress and severity of HF.

Aim: To assess the prognostic value of NTproBNP levels and the risk of short-term death in patients with HF.

Method: We studied 235 patients with an average age of 74.123 years, with clinical and echocardiographic signs of HF. 161 patients had (heart failure in reduced ejection fraction) HFrEF (EF≤45%) while 74 patients had (heart failure with preserved ejection fraction) HFpEF (EF>45%). NTproBNP was evaluated at the hospitalization and at discharge and in 76 patients it was furthermore checked after 30 days from discharge. The median followup was eight months. Moreover, we considered different parameters that may alter basic values NT-proBNP, such as chronic renal failure, physical activities and the use of certain drugs, overcoming these thresholds.

Results: NT-proBNP values are above 1100 pg/mL and are prognostically meaningful in chronic HF, and a rising pattern is predictive of impending adverse outcome. Moreover, drugs used for chronic HF (such as, vasodilators, aldosterone blockers and β-blockers) tend to lower values of NT-proBNP. NTproBNP at discharge gives an important prognostic index for mortality (HFrEF 28.9% deceased: CIndex 0.84 P<0.0001; HFpEF 13.6% deceased: CIndex 0.76 P=0.0004). In multivariate Cox analysis, it is the stronger and independent prognostic factor (HFrEF all P≤0.02; HFpEF all P≤0.03). The percentage changes stratify the risk only for mortality (χ² 13.68 P=0.001) conversely, categorical risk stratification shows a prognostic role for all outcomes (all log rank P<0.0001) and provides independent prognostic information when threshold values are specific for HFrEF or HFpEF compared to titrations.

Conclusions: The determination of levels of NTproBNP in patients with heart failure is important for prediction of cardiovascular events; increased levels of this biomarker indicate the severity of myocardial dysfunction and severity of chronic heart failure. High levels of NT-proBNP are related with decreasing expectation of life and worse quality of daily living.

adrianatamburello@gmail.com