Perioperative measurement of high-sensitivity cardiac troponin T (hs-cTnT): An essential move?

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Madam, cardiac troponin is the diagnostic mainstay for cardiomyocyte damage.[1] The newly emerging high-sensitivity cardiac troponin T (hs-cTnT) assay has improved sensitivity and precision in detecting myocardial injury and infarct than the standard troponin T assays.[1] The hs-cTnT assay is being clinically used in many countries now.

Surgical patients should be ensured maximal perioperative care. In spite of the developments in the perioperative care, around 500,000 to 900,000 non-cardiac surgical patients undergo cardiovascular complications each year worldwide.[2] This can be attributed to the production of various metabolic factors as a result of surgical stress and anaesthesia. These metabolic factors lead to a hypercoagulable, hypoxaemic and inflammatory state, increasing the risk for cardiac morbidity and mortality.[2] In fact, myocardial injury and infarct after a non-cardiac surgery remain common and under diagnosed complications.[3] Recently, a study under Deveraux et al suggests that monitoring of hs-cTnT can predict 30-day mortality risk in the non-cardiac surgery patients.[4] In the study, hs-cTnT levels of around 21,000 non-cardiac surgery patients (mean age 63 years) were measured 6 to 12 hours after surgery and on three consecutive days afterwards. The patients then had a follow-up for 30 days. The study showed that peak hs-cTnT levels of 20 ng/l or more, or a change of greater than 5 ng/l were strongly related to 30-day mortality in the patients. Patients with postoperative hs-TnT levels of 20 to less than 65 ng/l had a 30-day mortality rate of 3.0%; with 65 to less than 1000 ng/l had a rate of 9.1%; 1000ng/l and onwards had a 30-day death rate of 29.6%.[4] Previously, a research has associated fourth-generation troponin T levels with 30-day death risk in the non-cardiac surgery patients.[5] However, the hs-cTnT assay has a lower decision limit (14 ng/l) for myocardial injury compared to the fourth generation assay's limit (30 ng/l).[1] This makes the hs-cTnT preferable for the detection purpose.

Cardiac complication after non-cardiac surgery is known to have a higher incidence, economic burden and mortality rate.[3] A major proportion of the patients, worldwide, fail to get recognized owing to its asymptomatic nature and absence of routine perioperative screening of the biomarkers. Testing of hs-cTnT perioperatively, on routine basis, would allow for timely diagnosis and intervention and improve the prognosis. Further research needs to be done in this regard, with the assessment of preoperative levels as well, to completely explore its clinical practicability and potential.

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