Usual suspect: Myocardial injury and infarction after non-cardiac surgery

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Introduction

Every year, 100 million patients over 45 years of age are undergoing surgery. Among these, it is suggested that 1.1 million patients had symptoms of typical myocardial ischemia and 6.8 million patients had asymptomatic ischemia. The aim of this study is to investigate the preoperative risk factors and postoperative outcome in terms of myocardial ischemia in patients over the age of 45, who had undergone urological surgery in our hospital.

Methods

The files of ≥45 year 809 patients who underwent surgery in 2016-2017 were reviewed retrospectively. Preoperative comorbidities of patients, perioperative myocardial infarction and/or percutaneous intervention were recorded. Postoperative Hs-troponin T information was obtained (if any). The patient was called to investigate 1-year mortality and cardiac event.

Results

A total of 809 urological surgical patients were performed within 1 year period. Male patients were 81.7%, mean age 63.03±9.7 years, 46.5% of patients were ≥65. Outpatient anesthesia was applied 86.4% of the cases, 13.6% was not. There was no significant relationship between the type of anesthesia and myocardial infarction (MI) and high Hs-troponin T level ($p = 0.534$, $p = 0.307$, respectively). Hs-troponin T was performed in 69 (8.52%) patients in the postoperative period and was found to be high in 33.3% of these. Cardiology consultation was requested in 26 (3.3%) patients. There are 14 patients, and 5 of them have chronic renal failure. Although 225 patients had preoperative coronary artery disease, postoperative Hs-troponin T was studied in only 34 patients among them. Myocardial infarction was observed in 41 (5.1%) patients at postoperative 1 year. The MI ratio was 8.7% in patients aged ≥ 65 years, while it was 3.3% in 46-59 years ($p = 0.009$). When these 41 patients who had postoperative MI were identified, only 9 patients were checked in terms of Hs-troponin in the postoperative period, and 7 of them had high Hs-troponin. Among 41 patients, 26 (63.4%) patients had preoperative coronary disease ($p < 0.001$), and 11 (26.8%) patients had heart failure ($p < 0.001$). The 1-year mortality rate was 1.23% ($n = 10$).

Postoperative troponin was found to be high in 22% of patients who had MI ($p = 0.04$). Postop Hs-troponin was significantly higher in all patients with preoperative chronic kidney disease (5 patients) ($p = 0.003$). However only 2 of these patients had postoperative MI.

Discussion

Determination of undetected myocardial injury in the postoperative period is a very actual and important issue. By establishing postoperative myocardial damage, it is possible to prevent complications by determining the risk factors causing ischemia and their effects on the outcome. In this study, cardiac events were investigated within 1 year after the operation. Although there is no evidence of increased troponin in all patients, obvious cardiac events are suspected to be perioperative myocardial ischemia.

In patients who underwent urologic surgery ≥45 years of age, postoperative 1-year MI was found 5.1%. But this is the frequency of obvious infarction cases, we can not comment on perioperative myocardial injury because troponin is not examined. Despite the fact that many patients have risk factors preoperatively, and even 225 patients have preoperative coronary artery disease, it is very worrisome that troponin is not studied in the postoperative period. Of 41 patients with myocardial infarction, only 9 of which had troponin was seen, and this is showed us we missed a large part of iceberg. 1-year mortality due to MI was 1.23% ($n=10$). Also it was noted that only 1 of the patients had troponin value and 9 of the patients was not examine troponin. This study showed that, we are incapable of detecting perioperative silent and obvious myocardial damage. In light of this data, preoperative patient evaluation and postoperative cardiac follow-up should be more careful and rigorous

Figure 1: 809 patients evaluation in terms of Hs-TropT
* Hs-troponin T was studied 69 patients (8.52%) and was found elevated in 21 (30.5%) of 69. There were 7 patients who had MI in these 21 patients.

Figure 2: Patients who had MI
*The number of patients who had MI within 1 year postoperatively was 41 (5.1%). Postoperative troponin was found to be high in 7 (17%) of patients who had MI.