

ABSTRACT

Predictors of Cardiac Surgery-Associated Acute Kidney Injury among Palestinian Patients Who Undergo On-Pump Cardiac Surgery: A Retrospective Study

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Introduction: Cardio surgery-associated acute kidney injury (CSA-AKI) is found to be the second leading cause of acute kidney injury (AKI) in the intensive care settings, and ranges from 2%-5% in coronary artery bypass graft (CABG) surgeries to more than 30% in other cardiac surgery types. While the pathophysiology of CSA-AKI is not fully understood, it is related to several causes, mostly ischemia-reperfusion injury, inflammation, hemolysis and others, and thus it is correlated with variety of morbidities and mortality. On the other hand, CSA-AKI can be reduced and prevented, and this is investigated in several studies in the recent years.

Aim: The main aims of this study were to investigate the incidence of CSA-AKI among cardiac surgery patients in Palestine, as well as investigating the most common predictors of CSA-AKI among these patients.

Methodology: This study adopted the retrospective quantitative design, on a sample of 151 of cardio surgery patients from three Palestinian hospitals, which perform the largest number of open-heart surgeries. Adult patients with any type of on-pump open-heart surgery were included, and data were collected from electronic medical records. Data were analyzed using binary logistic regression in SPSS software.

Results: The sample included 151 on-pump cardiac surgery patients, 66.9% were males, 63.6% between 50 and 69 years old, 33.1% were overweight and 55% underwent CABG surgery. Patients had mostly normal EF (58.3%), and about half of them had HTN (49.7%) and DM II (47.0%). Differences between preoperative and postoperative laboratory findings were investigated, and mainly the percentage of normal creatinine level patients was 67.5% preoperatively, and increased to 69.5% 24-h and decreased to 56.5% 48-hr postoperatively, respectively. CSA-AKI occurred in 49 patients (32.5%), and was significantly associated with higher patient's BMI ($B = 0.106$, $OR = 1.112$, p -value = 0.006) and longer CPB time ($B = 0.015$, $OR = 1.015$, p -value = 0.002).

Conclusion: Around one third of on-pump cardiac surgery patients in Palestine develop CSA-AKI postoperatively, and was mainly related to their BMI and intraoperative CPB time. It is recommended to monitor patient's weight, vital signs and fluid balance by nurses, and to conduct further studies with more powerful designs to investigate more corresponding factors for CSA-AKI.

Keywords: AKI, RF, Cardiac surgery, Open heart, Cardiopulmonary bypass, On-pump.