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## The predictive impact of using NGAL and Cystatin C besides traditional troponins towards cardiac surgery-associated acute kidney injury (CSA-AKI) in hospitalized patients after invasive cardiopulmonary bypass

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**Background & Aim:** Cardiac surgery-associated acute kidney injury (CSA-AKI) is a highly progressive problem characterized by long-term ICU with devastating renal dysfunction over time resulting in a permanent renal tubular damage and/or high susceptibility for deaths after days of the surgery. However, CSA-AKI is a multifactorial, but remains the effect of cardiopulmonary bypass (CPB) used during surgery with the prominent one. In this study, we assessed NGAL and Cystatin C in serum levels with routine serum creatinine to evaluate whether there are any reliable markers for AKI in the earlier timings.

**Methods:** Fifty (50) patients were classified according to KDIGO criteria into AKI (n=26) and non-AKI (n=24) groups where, serum creatinine, NGAL and Cystatin C levels were quantified in the preoperative, perioperative and within 2 days of the surgery.

**Results:** Preoperative levels of Serum NGAL were increased in the AKI group ( $100 \pm 39.2$ ) than non-AKI group ( $78.6 \pm 45.5$ ), reaches the uttermost values at 0 h in both groups with significant distinct proportions but, suddenly reduced from 2 h to 2 days of CPB with ( $p \leq 0.05$ ). Further, serum Cystatin C levels exhibited a significant increasing behavior ( $p \leq 0.001$ ) in AKI vs. non-AKI starting with baseline ( $856 \pm 400$  vs.  $747 \pm 276$ ), at 0 h ( $932 \pm 480$  vs.  $724 \pm 177$ ), at 2 h ( $949 \pm 557$  vs.  $700 \pm 170$ ) and persisted high until 48 h of CPB ( $1421 \pm 739$  vs.  $910 \pm 422$ ) respectively.

**Conclusion:** Despite controversial results of serum NGAL, Cystatin C levels showed a highly discriminative power against CSA-AKI in the earlier 2 h of CPB. Therefore, studies on large scale are recommended to reveal which comorbidities affected serum NGAL levels.

### Biography

Osama F Mosa is working as Assistant Professor of Clinical Chemistry and Biochemistry, Department of Public Health, Health Science College at Lieth, Umm Al Qura University, KSA. His academic studies started with BSc in Biochemistry from Alexandria University, MSc in Medical Biochemistry from Alexandria Medical Research Institute and ultimately DSc in Clinical Biochemistry and Laboratory Biomedicine, Ljubljana Faculty of Pharmacy, Slovenia. His academic and lab professional experiences surpassed 10 years. He has publications in the Field of Autoimmune Diseases, CVD and Renal Diseases with a strong background as reviewer in many top ranked journals.

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