

## New insights into Cardio-Renal interactions – Role of NGAL

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### Abstract

#### Objective

Neutrophil gelatinase-associated lipocalin (NGAL) is an early marker of renal tubular damage. We investigated the incidence and possible implications of elevated NGAL levels (suggesting renal damage) compared to both functional and damage markers (manifested as serum creatinine (sCr) elevation) and no NGAL/sCr change, among ST elevation myocardial infarction patients (STEMI) treated with primary coronary intervention (PCI). We included 131 patients with STEMI treated with PCI. Blood samples for plasma NGAL were drawn 24 hours following PCI. We used the terms NGAL(-) or NGAL(+) with levels  $\geq 100$ ng/ml suggesting renal tubular damage and the terms sCr(-) or sCr(+) to consensus diagnostic increases in sCr defining acute kidney injury. Patients were also assessed for in hospital-adverse outcomes.

Of the study patients (42%) were NGAL(-)/sCr(-), (44%)NGAL(+)/sCr(-), and 14% were both NGAL(+)/sCr(+). According to the three study groups there was a stepwise increase in the proportion of left ventricular ejection fraction  $\leq 45\%$  (43% vs. 60%. Vs. 72%;  $p=0.04$ ), in-hospital adverse outcomes (9% vs. 14% vs. 56%;  $p<0.001$ ) and their combination. Specifically, more NGAL(+)/sCr(-) patients developed the composite endpoint when compared to NGAL(-)/sCr(-) patients [64% vs.46%; OR 2.1 (95% CI 1.1–4.5),  $P=0.05$ ]. A similar and consistent increase was observed in peak sCr, length of hospital stay and C-reactive protein levels. Similarly NGAL level aid in the early identification of acute kidney injury. In conclusion, elevated NGAL levels suggesting renal tubular damage, increased inflammation, or both, are common among STEMI patients and are associated with adverse outcomes even in the absence of diagnostic increase in sCr.

#### Biography:

Dr Yacov Shacham has completed his MD at the age of 29 years from Semmelweis university of medicine. He had completed residencies in internal medicine, cardiology and critical care cardiology. He is the director of the cardiac intensive care unit in the Tel-Aviv Sourasky medical center. He has published more than 85 papers in reputed journals and has been serving as a reviewer for many peer reviewed journals.



#### Speaker Publications:

1. Yacov Shacham, Association between Cardiovascular Risk Factors and Long-Term All-Cause Mortality in Thyroid Cancer Survivors: An Israeli Population-Based Study, June 2020
2. Yacov Shacham, Long-Term Outcomes in ST Elevation Myocardial Infarction Patients Undergoing Coronary Artery Bypass Graft Versus Primary Percutaneous Coronary Intervention, June 2020, The Israel Medical Association journal: IMAJ 22(6):352-356

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