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Left ventricular ejection fraction and adjudicated, cause-specific hospitalizations after myocardial infarction complicated by heart failure or left ventricular dysfunction

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Introduction: Patients with heart failure (HF) or left ventricular (LV) dysfunction after acute myocardial infarction (AMI) are at high risk of subsequent hospitalization. Identifying prognostic factors for hospitalization may reduce morbidity and improve effective healthcare expenditure. Low LV ejection fraction (LVEF) is an established predictor of adverse outcome after AMI, but its ability to forecast cause-specific hospitalization in a high-risk population is less well defined.

Purpose: We aimed to investigate the association between LVEF and adjudicated, cause-specific hospitalizations for HF, other cardiovascular (CV) and non CV causes in patients with a high risk for hospitalizations following complicated AMI.

Methods: In an individual patient data meta-analysis of three large randomized trials that included and followed subjects with high risk AMI (CAPRICORN, EPHESUS and VALIANT), Cox proportional hazards modeling was performed to study the association between LVEF sampled during the index AMI and the cause of subsequent hospitalizations during follow-up.

Results: 19,740 patients were included with a median follow-up of 707 (484–974) days, during which 2,368 HF hospitalizations, 6,952 other CV hospitalizations and 3,703 non CV hospitalizations occurred. The event rates for all types of hospitalizations increased with decreasing LVEF (Figure 1). In multivariable models adjusted for age, gender, Killip class, systolic blood pressure, comorbidities (diabetes, hypertension, renal insufficiency, chronic obstructive pulmonary disease,

peripheral artery disease), medication use (beta blockers, angiotensin converting enzyme inhibitors/angiotensin receptor blockers, diuretics), estimated glomerular filtration rate <60 mL/min/1.73m², hemoglobin and sodium, each 5-point decrease in LVEF was associated with a 22% increased risk of HF hospitalization (hazard ratio [HR] 1.22, 95% confidence interval [CI] 1.16–1.28), a 4% increased risk of other CV hospitalization (HR 1.04, 95% CI 1.01–1.08) and an 8% increased risk of non CV hospitalization (HR 1.08, 95% CI 1.04–1.13).

Conclusion: In a high-risk population following complicated AMI, LVEF was a strong and independent predictor of HF hospitalization, with a more modest ability to predict CV hospitalization and non CV hospitalization.

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Acute kidney injury during index hospitalization is associated with increased long term mortality risk in acute myocardial infarction patients. Results of a 5 year follow up

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Background: It is well known that presence of acute kidney injury (AKI) during an index hospitalization for acute myocardial infarction (AMI) has detrimental effect on patients' in-hospital and short-term prognosis. Little evidence exists regarding the impact of AKI on long term prognosis in these patients.

Purpose: We prospectively assessed the long-term prognostic significance of in-hospital AKI incidence in an adequately sized multicenter cohort of patients admitted with AMI.

Methods: We enrolled 805 consecutive patients presenting with acute ST-elevation and non-ST elevation AMI. Patients were assessed for presence of AKI at 48 hours post admission and at hospital discharge using the Acute Kidney Injury Network (AKIN), the Acute Dialysis Quality Initiative [Risk, Injury and Failure (RIFLE)] criteria and the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. Patients were followed up for five years regarding the occurrence of death, major adverse cardiovascular events (MACE); re-hospitalization for AMI, cardiogenic shock, stroke or repeat revascularization), need for renal replacement therapy (RRT), or occurrence of chronic kidney disease (CKD). Data were obtained from 518 AMI patients (63±14 years of age, 122 female) of the initial study cohort (64%) with a mean follow up of 5.6±0.9 years. From the study cohort 52 patients (10%) developed AKI at 48 hours and 84 (16%) at discharge during index hospitalization.

Results: During follow-up 102 (20%) patients died, MACE occurred in 98 (19%) patients, 18 (4%) patients developed CKD and 10 (2%) patients needed RRT. Patients with AKI at 48 hours had a four-fold increased mortality risk [odds ratio (OR) 4.3 with 95% Confidence Interval (CI) 2.3–7.8; P<0.001] whereas those with AKI at hospital discharge were associated with a three-fold increased risk (OR 3.2 95% CI 1.9–5.3; P<0.001) compared to patients who did not develop AKI during index hospitalization. Neither AKI at 48 hours nor AKI at hospital discharge were significantly predictive of MACE, CKD or need for RRT during the long-term follow up.

Conclusions: AKI incidence during hospitalization is associated with increased long-term mortality risk in patients admitted for AMI. Further studies are needed to elucidate further the underlying pathophysiologic mechanisms explaining the association between in-hospital AKI incidence and long term mortality and morbidity.

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Reduced vs. preserved left ventricular ejection fraction in acute coronary syndrome patients: trend in prognosis over a decade

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Introduction: Data regarding long-term prognosis trend in relation to left ventricular ejection fraction (LVEF) in patients presenting with acute coronary syndrome (ACS) is limited.

Method: We aimed to evaluate the rate and long-term prognosis trend of reduced vs. preserved LVEF between two periods of time (i.e. years 2000–2006 – early period vs. 2008–2016 – late period) in patients presenting with ACS. Patients were enrolled from the acute coronary syndrome Israeli survey (ACSIS) between the years 2000–2016.

Results: Out of 11713 patients with known LVEF, 43% and 57% had preserved (>50%) vs. reduced LVEF, respectively. Significantly more patients presented with preserved LVEF in the late period as compared with the early period (51% vs. 33%, p<0.0001, respectively). Patients with reduced LVEF had higher 1 and 3-year all-cause mortality rates as compared with patients with preserved LVEF (13.8% vs. 3.6% for 1-year and 19.1% vs. 6% for 3-years, respectively; p<0.0001 for both) regardless of the time period (p<0.0001 by log-rank between LVEF >50% vs. LVEF <50% in early as well as late periods, figure 1). Cox proportional hazard model showed that in contrary to patients with preserved LVEF who

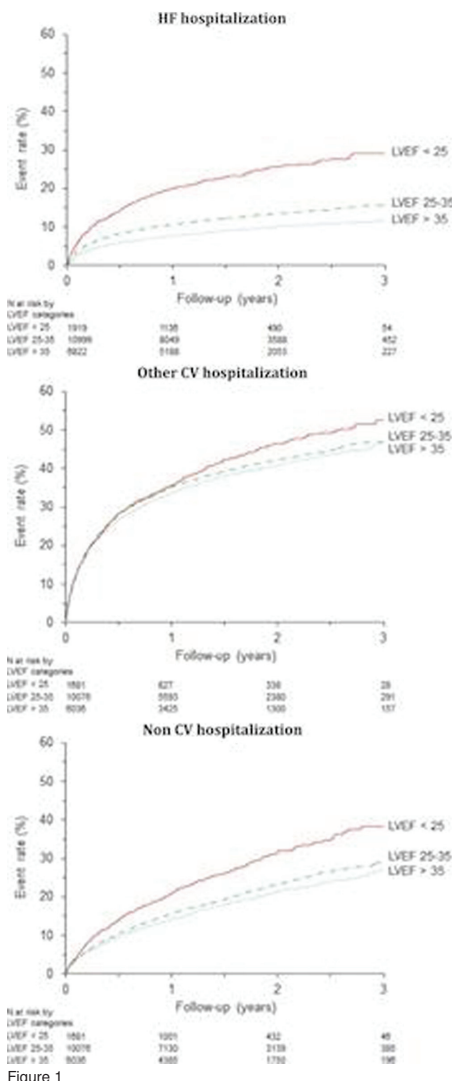


Figure 1