Summary

Acute heart failure represents a medical condition with very high mortality. Accurate risk stratification can help physicians to improve the health care about these patients. The aim of our study was to characterise patients admitted for acute heart failure, describe their demographic and clinical findings and to assess risk factors of short-term and long-term mortality. We further analysed risk factors of longer hospital stay among initial signs and precipitating factors of heart failure.

We performed a retrospective analysis of patients admitted to the standard care and intensive care units from January to December 2017 to 1st Department of Internal Medicine - Cardioangiology of University Hospital Hradec Králové. We identified 385 patients admitted for acute heart failure. The all-cause in-hospital mortality was 12.7 %, 30-day mortality was 14.6 % and 1-year mortality was 34 %. Among risk factors of in-hospital mortality the most significant factors were the requirement of haemodialysis with ultrafiltration (OR 15.82, 95% CI 2.96–84.57, $p = 0.0008$), previously known chronic heart failure (OR 4.27, 95% CI 1.66–11.03, $p = 0.001$) and STEMI as a precipitating factor of heart failure (OR 4.19, 95% CI 1.23–14.25, $p = 0.023$). The requirement of haemodialysis with ultrafiltration (OR 4.28, 95% CI 1.17–15.61, $p = 0.025$) and the comorbidity depression (OR 3.49, 95% CI 1.45–8.39, $p = 0.005$) were the most significant risk factors of long-term mortality. 376 patients had known value of ejection fraction (EF) of left ventricle. The median of length of hospitalization of these patients was 11 days (IQR 6–18). 198 patients (52.7 %) presented with reduced (<40 %), 58 patients (15.4 %) with mildly reduced (40–49 %) and 120 patients (31.9 %) with preserved EF (≥50 %). In patients with reduced EF peripheral swelling (OR 1.97, 95% CI 1.02–3.78, $p = 0.041$) and X-ray pulmonary congestion (OR 2.72, 95% CI 1.38–5.34, $p = 0.003$) were associated with longer hospitalization. Non-pulmonary infection (OR 50.57, 95% CI 2.82–906.84, $p <0.001$) and heart failure progression as a precipitating factor (OR 15.33, 95% CI 1.25–188.53, $p = 0.017$) were associated with longer hospitalization in patients with mildly reduced EF. Acute pulmonary disease was associated with longer hospitalization in patients with mildly reduced (OR 10.77, 95% CI 1.06–108.81, $p = 0.027$) and preserved (OR 3.96, 95% CI 1.05–14.96, $p = 0.031$) EF.

Our study confirms very high mortality rates among patients with acute heart failure. Precipitating factors and signs of acute heart failure have different impacts on the length of hospitalization among patients with reduced, mildly reduced or preserved EF. Comorbidities (peripheral artery disease, atrial fibrillation and depression), known chronic heart failure,

precipitating factors of heart failure (myocardial infarction with ST segment elevation), complications occurring during the hospitalization (acute kidney injury, pulmonary ventilation for respiratory failure and the requirement of haemodialysis with ultrafiltration) and the age of patients should be included in the risk stratification of in-hospital, 30-day and 1-year mortality.