Introduction:
Acute kidney injury (AKI) is a major complication after heart transplantation (HTx), but the relation with the preoperative right heart hemodynamics (RHH) remain largely unknown. The aim of this study was to determine whether the routine and novel RHH could predict the development of AKI and 1-year patient survival in patients with HTx.

Methods:
Data of all consecutive HTx patients (n=595) in our tertiary referral center, between 1984 and 2016, were collected and analyzed for the occurrence of AKI and survival at 1 year.

Results:
AKI was developed in 430 (72%) patients; 278 (47%) stage-1, 66 (11%) stage-2, and 86 (14%) stage-3. Renal replacement therapy (RRT) was needed in 41 (7%) patients, with subsequent increased risk for chronic RRT-dependency at 1-year (odds ratio: 3.3 [95% CI: 1.6–6.6], p=0.001). Patients with higher AKI stages had also higher baseline right atrial pressure (RAP) (median: 7, 7, 8, 11 mmHg, p-trend=0.021), RAP/PCWP ratio (0.37, 0.36, 0.40, 0.47, p-trend=0.009), and lower pulmonary artery pulsatility index (PAPi) values (2.83, 3.17, 2.54, 2.31, p-trend=0.012). Patients with higher AKI stages had significantly lower survival at 1-year (5, 7, 15, 14 %, log-rank, p-trend=0.021) with worst outcome for RRT patients (1-year mortality with RRT vs no RRT: 22% vs 8%, log-rank, p=0.001).

Conclusion:
AKI is highly frequent early after HTx and is inversely associated with 1-year patient survival. The routinely collected preoperative PAPi and RAP predict the development and severity of AKI early after HTx and could be used to timely intervene and prevent the development of AKI.