



RISK FACTORS OF ACUTE KIDNEY INJURY IN PATIENTS WITH ACUTE CARDIAC DISEASES

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Background and Objective

- Acute kidney injury (AKI) is an important clinical issue.
- It has been shown in multiple studies to be a key independent risk factor for mortality, even after adjustment for demographics, severity of illness and other relevant factors.
- Large studies estimating the prevalence of cardiorenal syndromes in Russian population are limited
- The aim of the study was to assess the prevalence and predictors of AKI in patients with acute cardiac diseases.

Inclusion criteria

Patients admitted in emergency department (n=278 with acute decompensation of heart failure (ADHF) and n=288 with non-ST-elevation acute coronary syndrome (NSTEMI-ACS)).

Methods

- Detection and classification of acute kidney injury (AKI) according KDIGO Guidelines 2012¹
- Detection and classification of chronic kidney disease (CKD) according KDIGO Guidelines 2012²
- Mann-Whitney test was performed. P <0.05 was considered statistically significant

¹ KDIGO Clinical practice guideline for acute kidney injury. Kidney Int. 2012; 2(1): 1–141.

² KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney Int (Suppl.) 2013;3:1-150

Study population (n=566)

Parameters	Value
Male, n (%)	260 (46)
Age, years (M±SD)	71±11
Smokers, n (%)	159 (28)
Arterial hypertension, n (%)	515 (91)
Diabetes mellitus, n (%)	159 (28)
Previous myocardial infarction (MI), n (%)	255 (45)
Previous hospitalizations with ADHF, n (%)	311 (55)
Atrial fibrillation, n (%)	198 (35)
Chronic obstructive pulmonary disease, n (%)	170 (30)
Anemia, n (%)	187 (33)
Blood pressure, mmHg (M±SD)	142±30/83±16
Ejection fraction <35%, n %	85 (15)

Results

- Incidence of AKI in all patients, patients with ADHF and NSTEMI-ACS was 40, 43.5 and 37.2%.
- AKI stage 1 was prevalent. (Fig. 1).
- Patients with vs without AKI had higher rate of previous MI (56.6 vs 36.7%, p<0.001), stable angina (43.9 vs 33.9%, p<0.05), CKD (52 vs 41.4%, p<0.05), DM (33.6 vs 24.3%, p<0.05), obesity (48.5 vs 39.3%, p<0.05) acute HF or ADHF at admission (74.7 vs 60.7%, p<0.001), MI at admission (39.3 vs 28.7%, p<0.05), anemia (38 vs 30%, p<0.05), serum creatinine (SCr) >118 µmol/l (50 vs 22%, p<0.01), systolic BP <110 mmHg (16.7 vs 8.3%, p<0.01).
- In-hospital mortality in patients with AKI was higher: in ADHF 12.4 vs 5%, p<0.01, in NSTEMI-ACS 17.8 vs 3.3%, p<0.001 and was associated with the stage of AKI: in III stage – mortality was 72,2% in patients with ADHF and 50% in patients with NSTEMI-ACS. (Fig.2).
- Independent predictors of AKI were: GFR <30 ml/min/1.73 m² (OR 6.5, 95% CI 3.4-12.6, p<0.001), SCr >118 µmol/l (OR 5.5, 95% CI 3.6-8.5, p<0.001), systolic BP <90 mmHg (OR 4.6, 95% CI 1.2-17.1). (Tab. 1).

Figure 1. Stages of AKI in patients with ADHF, NSTEMI-ACS

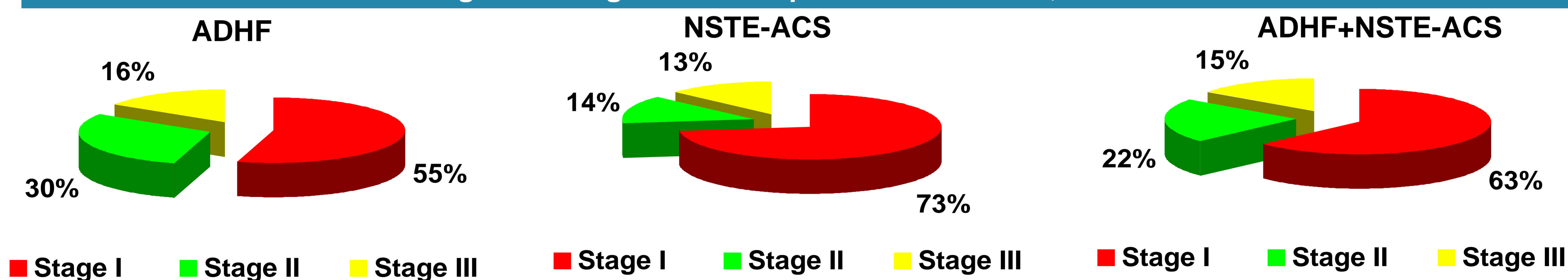
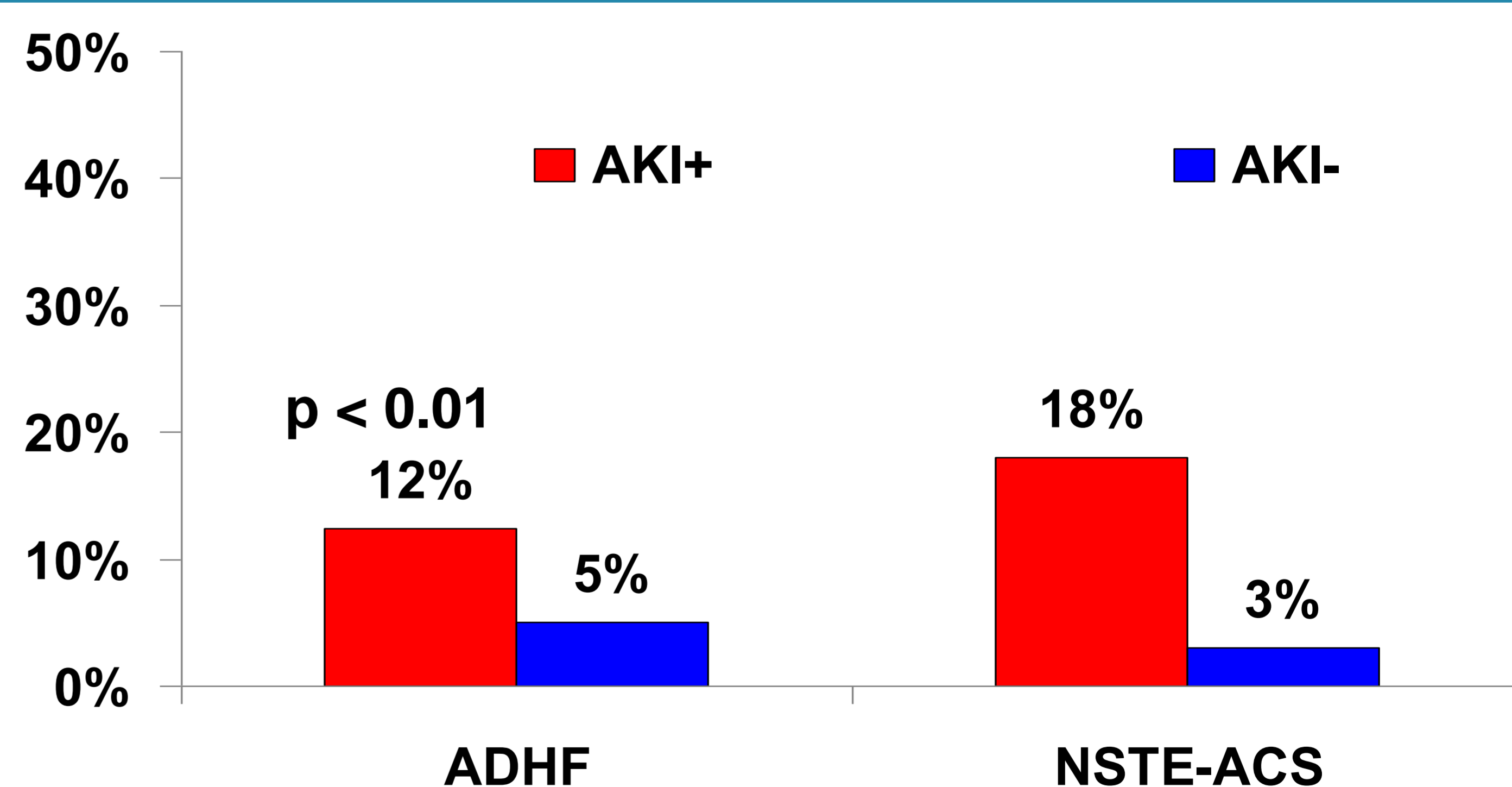


Table 1. Predictors of AKI

Parameters	Odds ratio	Confidential interval	p
GFR <60 ml/min/1.73 m ²	2.3	1.6-3.2	<0.001
Previous myocardial infarction	2.3	1.6-3.17	<0.001
Systolic BP <110 mmHg	2.21	1.32-3.17	<0.01
AHF/ADHF	1.95	1.3-2.8	<0.001
Hemoglobin < 11,4 g/l	1.8	1.2-2.7	<0.01
Diabetes mellitus	1.6	1.1-2.31	<0.05
CKD	1.5	1.1-2.17	<0.05

Figure 2. Associations of AKI with mortality



Conclusions

- 40% of patients admitted to the hospital with NSTEMI-ACS and ADHF developed AKI.
- Patients with baseline systolic BP <90 mmHg, GFR <30 ml/min/1.73 m², SCr >118 µmol/l are at high-risk for development of AKI.
- AKI was associated with higher in-hospital mortality.

Disclosure: none