



The decrease of estimated glomerular filtration rate is associated with high incidence of transient arterial hypotension in patients with chronic cardiorenal syndrome

Shutov A., Serova D., Serov V., Serova S.

Department of Internal Medicine, Medical Faculty, Ulyanovsk State University, Ulyanovsk, Russian Federation

Purpose

The aim of this study was to determine the incidence of the transient arterial hypotension in patients with chronic cardiorenal syndrome depending on the kidney function.

Methods

211 patients with chronic heart failure (126 males and 85 females) were studied.

Mean age – 58.1 ± 10.8 years.

NYHA functional class of CHF:

NYHA Class I – 25(12.5%) NYHA Class II – 86(47.4%)

NYHA Class III – 96(39.5%) NYHA Class IV – 4(0.6%)

Main cause of CHF was coronary artery disease associated with arterial hypertension - 195 patients.

All pts were stable on their antihypertensive regime at the time of the study.

Patients with CRT-implantable devices were not included in this study.

Patients were treated according to ESC Guidelines for the Diagnosis and Treatment of Acute and Chronic Heart Failure, 2012.

The 24-hour ambulatory blood pressure monitoring (ABPM) was performed.

During ABPM arterial hypotension was diagnosed according to the criteria P.E. Owens and E.T. O'Brien (2001).

The definition of transient arterial hypotension was the detection at least one episode of arterial hypotension during 24-hour ABPM.

Distribution of the patients with CHF depending on the estimated glomerular filtration rate (eGFR) shown in Fig. 1.

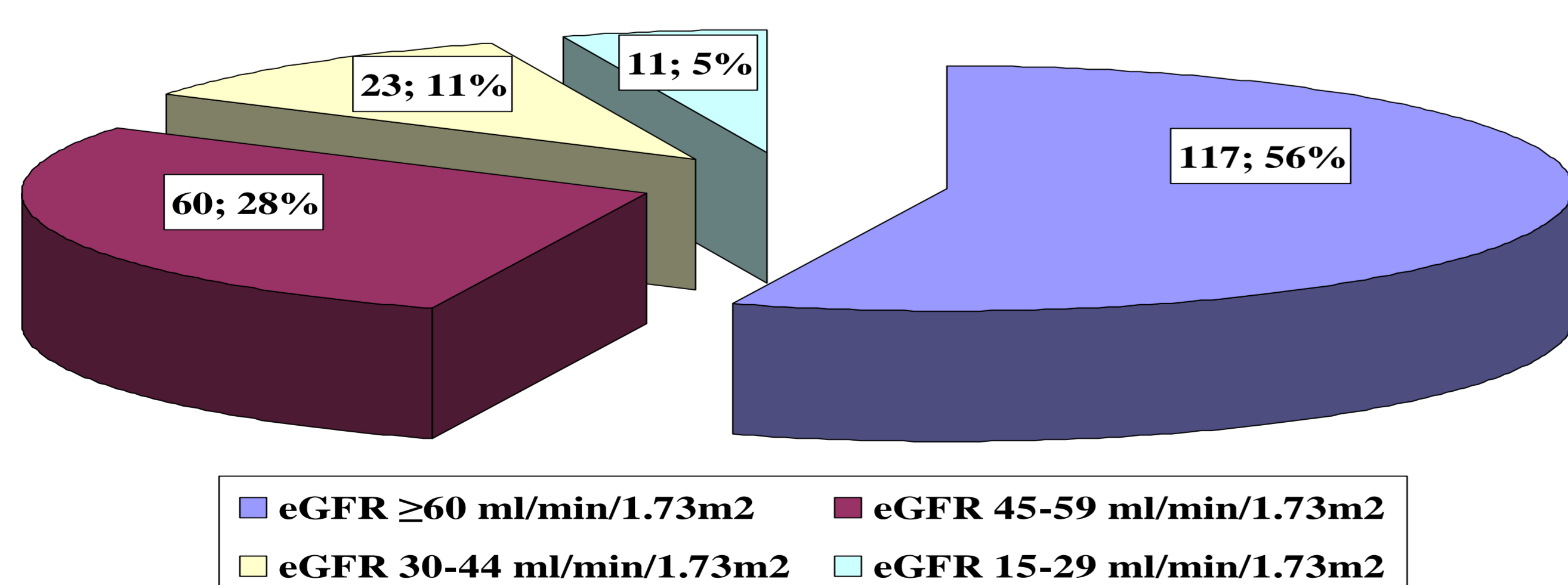


Fig. 1. Estimated glomerular filtration rate in patients with CHF

Results

Transient arterial hypotension has high incidence in patients with chronic heart failure (Fig. 2). Transient arterial hypotension during ABPM was revealed more often in the daytime - 86 (40.8%), only in nighttime – in 3 (1.4%) patients, both in daytime and nighttime – in 55 (26.1%) patients.

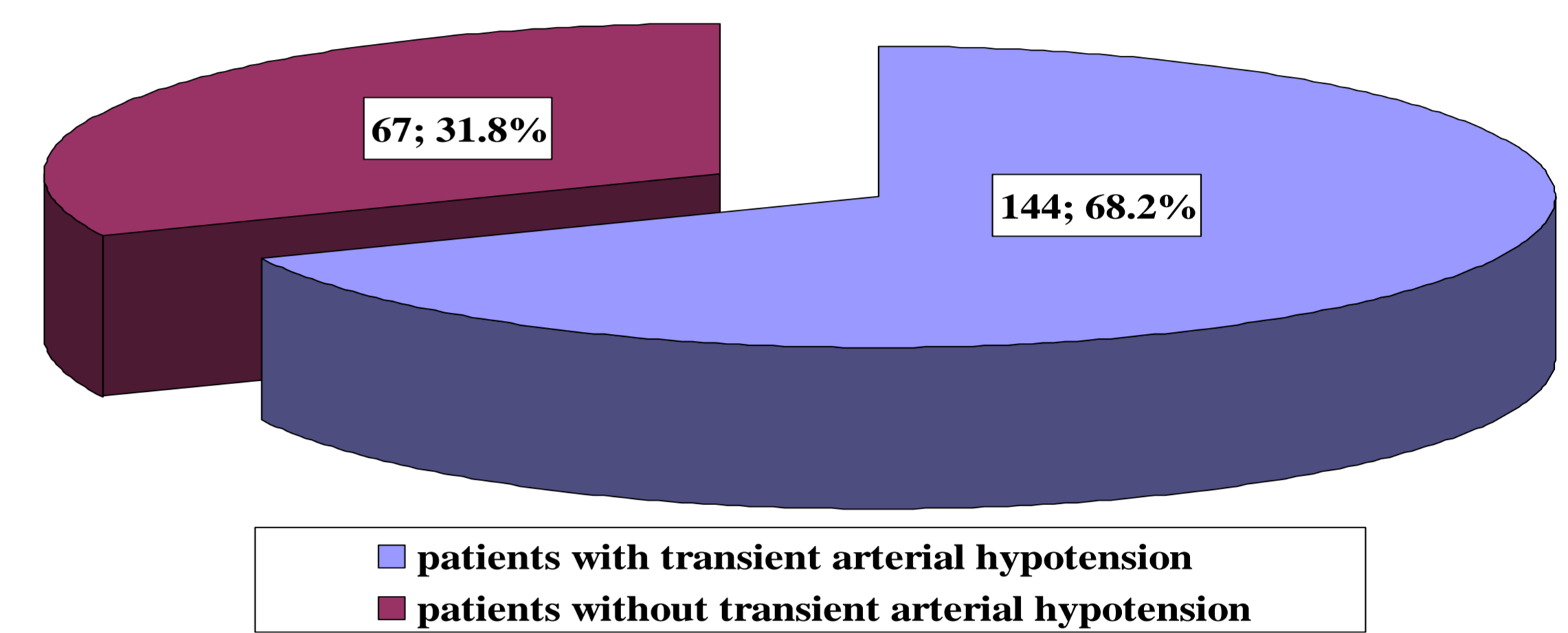


Fig. 2. The incidence of transient arterial hypotension in patients with chronic heart failure

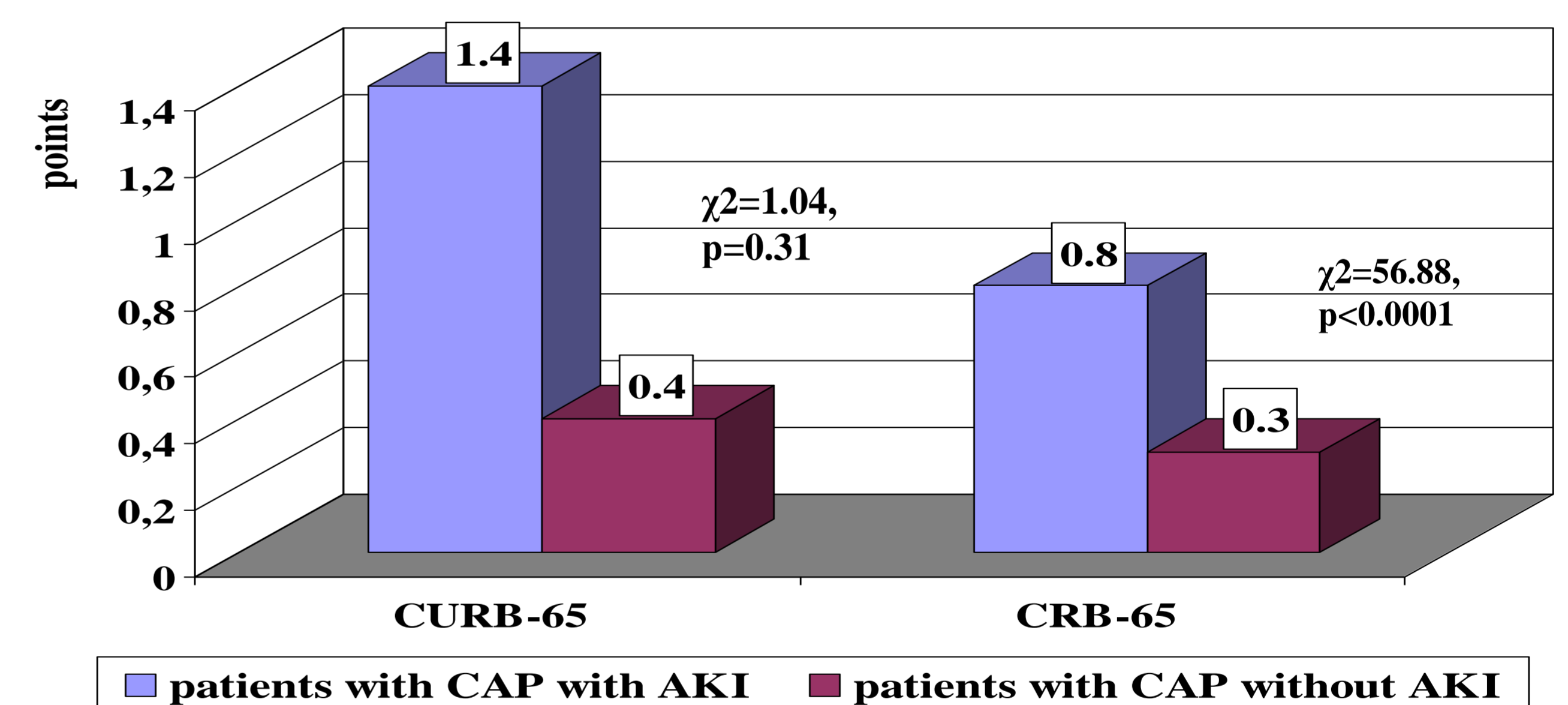


Fig. 3. Transient arterial hypotension is associated with low eGFR

Patients with $eGFR < 60$ ml/min/1.73m² had higher incidence of transient systolic and diastolic arterial hypotension (Fig. 3).

The decrease eGFR was associated with the increase in time index and area index of systolic arterial hypotension ($R=0.16, p=0.03$ and $R=0.17, p=0.02$, respectively) and diastolic arterial hypotension ($R=0.21, p=0.004$ and $R=0.21, p=0.003$, respectively) as well.

Conclusions

1. Transient arterial hypotension is observed in 68% normotensive and hypertensive patients with chronic cardiorenal syndrome.
2. The decrease estimated glomerular filtration rate is associated with the increase of incidence and severity of transient arterial hypotension in patients with chronic cardiorenal syndrome.