Kidney disease linked to increased mortality after stroke thrombolysis

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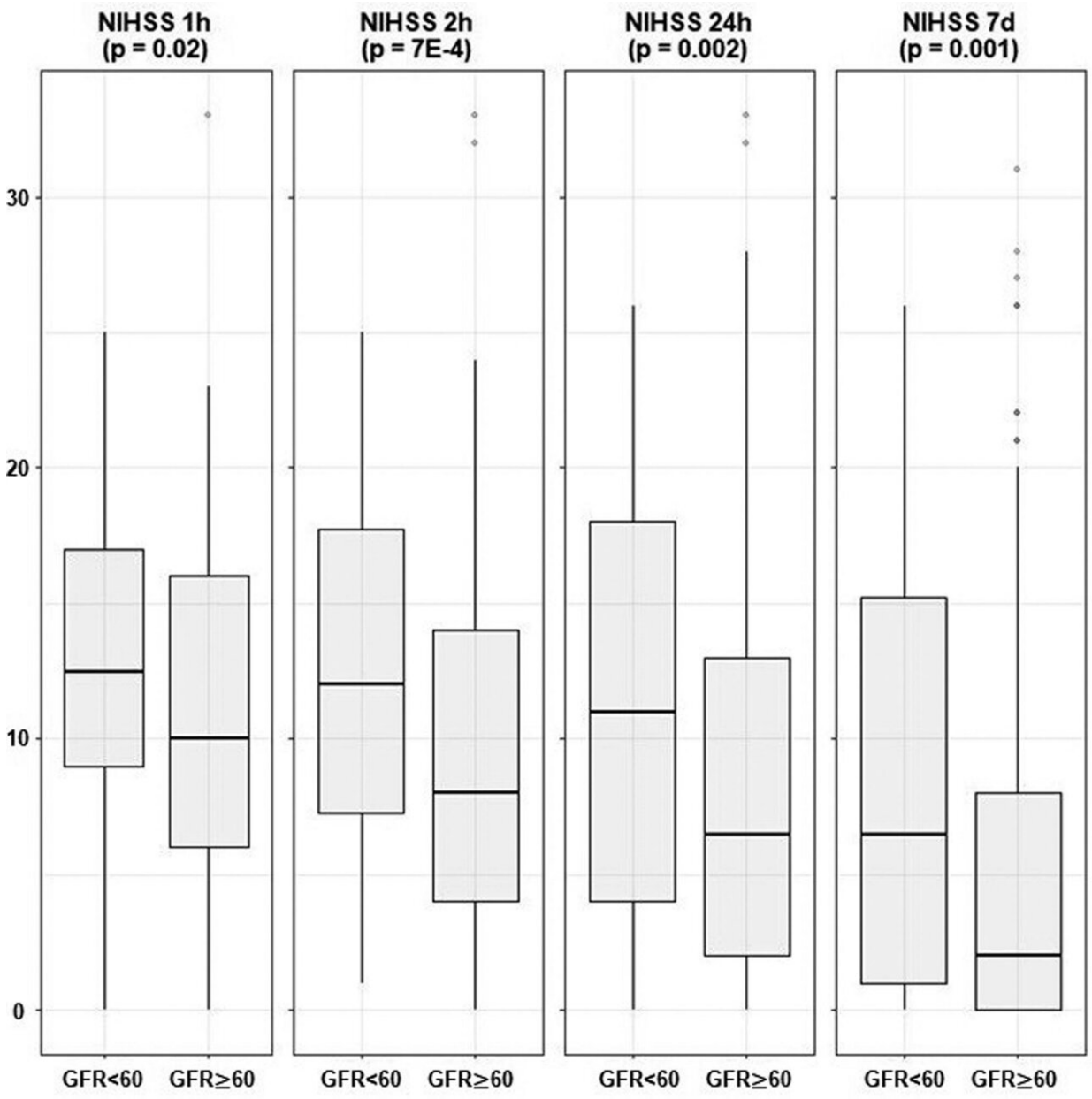

The association of NIHSS at various time points with the degree of severity of kidney dysfunction as evaluated by eGFR using 60 mL/min per 1.73 m2 as threshold. Mann-Whitney test was employed for estimating the association. eGFR = estimated glomerular filtration rate (as determined by CKD-EPI equation), NIHSS = National Institutes of Health Stroke Scale. Credit: *Medicine* (2023). DOI:10.1097/MD.0000000000035688

Renal dysfunction, especially chronic kidney disease, is the biggest risk factor of mortality among thrombolysed stroke patients, according to a retrospective cohort observational study published in *Medicine*.

Kidney dysfunction can have a serious negative impact on cardiovascular health. Studies have shown that it can lead to hardening of the arteries, known as atherosclerosis. Chronic kidney disease (CKD) can increase the risk of mortality among patients with cardiovascular diseases.

Previous research has also marked renal dysfunction as a risk factor for in-hospital mortality among patients with acute ischemic stroke who underwent thrombolysis—a procedure that uses intravenous medications to break up arterial blood clots. However, several factors increase the risk of mortality among stroke patients, and the importance of kidney dysfunction has not been evaluated relative to other risk factors.

"We performed a retrospective observational study to establish the importance of CKD among various cardiovascular risk factors that influence the outcome of stroke patients receiving thrombolytic treatment. We used electronic medical data of a cohort of 296 acute ischemic stroke patients who had received thrombolysis between 2016 and 2020 at the Carol Davila National Institute of Neurology and Neurovascular Diseases," explains Dr. Maria Mirabela Manea of Carol

Davila University of Medicine and Pharmacy, Romania, who is the corresponding author of the paper.

The research team assessed kidney function along with other factors, such as age, sex, body mass index, obesity, hypertension, diabetes, high blood cholesterol, smoking, frequent drinking, and history of heart disease. Several neurological scores, such as the Alberta Stroke Program Early CT Score (ASPECTS), Barthel index, modified Rankin Scale (mRS), and National Institutes of Health Stroke Scale (NIHSS), were used to determine the importance of each risk factor.

The impact of kidney dysfunction on patient outcomes

The study assessed kidney dysfunction using the estimated glomerular filtration rate (eGFR) of patients, which is a widely accepted measure of how well your kidneys are working.

While the normal eGFR value is expected to be above 90 mL/min per 1.73 m^2 body surface area, around 32% of patients showed a very low eGFR of less than 45-60 mL/min, confirming kidney dysfunction. Kidney dysfunction (low eGFR) was firmly associated with in-hospital death in almost all scores. Kidney dysfunction was also the biggest factor that affected the various neurological scores, surpassing factors like age and blood creatinine levels.

The study strongly suggests incorporating kidney status into treatment guidelines for thrombolysis, as it has the potential to impact a significant number of stroke patients. Additionally, in order to improve the safety and efficacy of thrombolysis medication in patients with kidney dysfunction, personalized treatment strategies must be employed.

"This is the first study to report the significance of CKD as a risk factor among stroke patients. The findings of this study hold notable medical significance, which can be used to improve upon current stroke management algorithms," Dr. Manea concludes.

The results of this study open avenues for future research in this area, and prospective, multi-center studies with larger samples of patients from various ethnic backgrounds will help strengthen these results and shape future guidelines on stroke management.

More information: Dragoș, Dorin et al, Risk factors for the outcome after thrombolysis in acute ischemic stroke—the prominent role of kidney dysfunction: A retrospective cohort observational study, *Medicine* (2023). DOI: 10.1097/MD.0000000000035688 journals.lww.com/md-journal/fu … ombolysis_in.26.aspx

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