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The association between urinary 11-dehydro-thromboxane B2 and pulmonary blood pressure in aspirin-treated patients with cardiorenal syndrome

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Objectives: Thromboxane A2 is a vasoactive agent produced by platelets. However, its impact on the development of pulmonary hypertension in patients with chronic heart failure (CHF) and the possible preventive role of aspirin remain unclear. The aim of the present study was to evaluate the association between urinary 11-dehydro-thromboxane B2 and pulmonary blood pressure in aspirin-treated patients with cardiorenal syndrome.

Methods: 30 patients with CHF and CKD (stages 2-4) were included in the study. Echocardiography was performed using GE Vivid E9 ultrasound system. Urinary levels of 11-dehydro-thromboxane B2 (a stable metabolite of thromboxane A2) was assessed using ELISA kit by Enzo Life Sciences (Switzerland). Spearmen's correlation coefficient (rs) was used for statistical analysis.

Results: The mean level of pulmonary blood pressure was 39.7±2.4 mm Hg. The mean urinary concentration of 11-dehydro-thromboxane B2 amounted to 426.3±46.9 pg/ml. Pulmonary blood pressure was correlated with age (rs=0.495, p=0.005), body mass index (rs=-0.458, p=0.011) and left ventricular ejection fraction (rs=-0.437, p=0.016), while the level of 11-dehydro-thromboxane B2 was not interconnected with these data. Both parameters were not correlated with eGFR (CKD-EPI). In the overall group, pulmonary blood pressure and urinary 11-dehydro-thromboxane B2 were not interconnected. However, in the subgroup of men we found a strong correlation between pulmonary blood pressure and urinary 11-dehydro-thromboxane B2 (rs=-0.811, p=0.027), which was not observed in the subgroup of women (rs=-0.172, p=0.443).

Conclusions: According to the results of our study, pulmonary blood pressure and the urinary level of 11-dehydro-thromboxane B2 are positively correlated in men, but not in women with CHF and CKD receiving treatment with aspirin. Clinical relevance of these findings is to be established in larger studies.