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Glomerular Filtration Rate as a Prognostic Marker in Acute Pulmonary Embolism

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Dear Editor,

We read with great interest the article titled “Glomerular filtration rate as a prognostic factor for long-term mortality after acute pulmonary embolism” by Țibietis et al. [1]. We have some comments on glomerular filtration rate and related factors as prognostic markers in acute pulmonary embolism.

The authors concluded that decreased creatinine clearance or estimated glomerular filtration rate are independent prognostic factors for increased all-cause mortality 90 days and 1 year after acute pulmonary embolism. In addition, these parameters were associated with a high risk for pulmonary embolism [1].

Chronic kidney disease is a well-known prognostic factor in various cardiovascular diseases. Renal function impairment in acute pulmonary embolism may be related to pre-existing chronic kidney disease or deterioration secondary to hemodynamic failure [2]. Sometimes patients with acute pulmonary embolism may experience a transient decline of renal function, which improves during treatment. Țibietis et al. [1] have shown that persistent renal function decline was significantly associated with higher mortality. In fact, the authors have identified age as one of the factors associated with 90-day mortality, but not with 1-year mortality. Additionally, glomerular filtration rate by Modification of Diet in Renal Diseases (MDRD) is a significant mortality factor at 90 days but failed to demonstrate significance at 1 year. It is not clear how these results can be explained.

In a much larger study, Ouatu et al. [3] have also prospectively studied parameters associated with fatal prognosis at the long term in patients with non-high-risk pulmonary thromboembolism. Pa-

tients with high-risk pulmonary thromboembolism associated with cardiogenic shock or blood pressure <90 mm Hg were excluded [3]. The highest 2-year mortality rate was recorded in patients with moderate renal impairment associated with right ventricular dysfunction. In this study, glomerular filtration rate assessed by the MDRD formula was an independent predictor of 2-year mortality, besides troponin I, dyslipidemia, acceleration time of pulmonary ejection, pericardial effusion, and brain natriuretic peptides.

Atrial fibrillation may be an independent predictor of 6-month mortality in patients with acute pulmonary embolism [4]. Therefore, we wondered whether the patients included in the study had previous episodes of atrial fibrillation (or during the study). There is an ongoing debate about which of the known formulas for glomerular filtration rate (Cockcroft-Gault, MDRD, and CKD-EPI) should be used for risk stratification in non-valvular atrial fibrillation patients [5]. It seems that Cockcroft-Gault might be more appropriate [5]. However, there is clear evidence that this subject remains a matter of debate and deserves further carefully designed clinical studies.

Disclosure Statement

The authors declare no conflicts of interest.

References

- Țibietis V, Kigitoviča D, Vītola B, Strautmane S, Skride A. Glomerular filtration rate as a prognostic factor for long-term mortality after acute pulmonary embolism. *Med Princ Pract*. DOI: 10.1159/000497436.
- Berghaus TM, Schwaiblmair M, von Scheidt W. Renal biomarkers and prognosis in acute pulmonary embolism. *Heart*. 2012 Aug;98(16):1185–6.
- Ouatu A, Tănase DM, Floria M, Ionescu SD, Ambăruș V, Arsenescu-Georgescu C. Chronic kidney disease: prognostic marker of nonfatal pulmonary thromboembolism. *Anatol J Cardiol*. 2015 Nov;15(11):938–43.
- Barra SN, Paiva LV, Providência R, Fernandes A, Leitão Marques A. Atrial fibrillation in acute pulmonary embolism: prognostic considerations. *Emerg Med J*. 2014 Apr;31(4):308–12.
- Barra S, Providência R, Faustino C, Paiva L, Fernandes A, Leitão Marques A. Performance of the Cockcroft-Gault, MDRD and CKD-EPI Formulae in Non-Valvular Atrial Fibrillation: Which one Should be Used for Risk Stratification? *J Atr Fibrillation*. 2013 Oct;6(3):896.