

Author's Reply

To the Editor,

We appreciate the comments and suggestions made by the authors of the Letter-to-the-editor entitled "Renal dysfunction as a marker of increased mortality in patients with pulmonary thromboembolism" (1), and we would like to thank them for their insightful comments regarding several aspects of our paper published in *Anatol J Cardiol* 2015; 15: 938-43 (2). We have some remarks and specifications to make.

We studied prospectively the factors associated with mortality in 404 consecutive patients with non-high-risk pulmonary thromboembolism followed up for 2 years. The highest 2-year mortality rate (20%) was recorded in patients with moderate renal dysfunction associated with right ventricle dysfunction. We agree that mortality risk stratification in this population is very important and therefore could benefit from further risk stratification.

Chronic kidney disease is associated with increased cardiovascular morbidity and mortality. Renal impairment is a common and independent predictor of stroke and systemic embolism (3). For example, 2 years ago, a novel score for thromboembolic risk (R2CHADS2) in non-valvular atrial fibrillation was proposed (4). This index includes creatinine clearance <60 mL/min/L, and it was shown to have higher discriminating capacity of thromboembolic risk (4). In our study there were no significant differences between the number of patients with atrial fibrillation in non-survivors versus survivors [n=15(45.5%) versus n=138(37.2%); p=0.349]. But thromboembolic risk parameters included in CHA2DS2-VASc like diabetes mellitus, age ≥ 75 years, previous deep thrombophlebitis were significantly more frequently in non-survivors versus survivors (see Table 1). Therefore, in our study, thromboembolic risk scores assessment in non-survivors versus survivors is on-going.

In the non-survivors group, there were no patients with cancer; but these patients were older, more frequently females, and with pericardial effusion (known as prognostic factor in patients with pulmonary hypertension) and lower acceleration time (as marker of pulmonary hypertension). In addition, in non-survivors, glomerular filtration rate was significantly lower than in survivors (51.85 \pm 19.08 mL/min/1.73 m² versus 71.65 \pm 23.21 mL/min/L.73 m²; p=0.000). The causes of death in these patients were related in majority to the more advanced renal and cardiovascular disease (please see Table 1 for GFR, troponin, and BNP values, which are significantly higher in non-survivors than survivors). They also have had more comorbidity, such as diabetes mellitus, coronary heart disease, previous deep thrombophlebitis or varicose veins, COPD, and/or heart failure. Right ventricle dysfunction obviously was an important factor that contributed to a fatal prognostic in these patients. Unfortunately, few autopsies have been performed; therefore, possible recurrences of fatal venous thromboembolism were not diagnosed. The diverse etiologies of death might be more attentively further investigated in our study.

In conclusion, we totally agree that renal dysfunction could be a predictor of both early and long-term increased mortality in patients with acute pulmonary thromboembolism, and also

that this heterogeneous population with non-high-risk pulmonary thromboembolism must be evaluated in further carefully designed clinical studies.

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References

1. Nistor DO, Sirbu V, Oltean G, Oprea M. Renal dysfunction as a marker of increased mortality in patients with pulmonary thromboembolism. *Anatol J Cardiol* 2016; 16: 00-00.
2. 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; 15: 938-43.
3. Sun Y, Wang Y, Jiang J, Wang L, Hu D. Renal dysfunction, CHADS2 score, and adherence to the anticoagulant treatment in nonvalvular atrial fibrillation: A cross-sectional study in Mainland China. *Clin Appl Thromb Hemost* 2015 Oct 14. Epub ahead of print.
4. Piccini JP, Stevens SR, Chang Y, Singer DE, Lokhnygina Y, Go AS, et al. Renal dysfunction as a predictor of stroke and systemic embolism in patients with nonvalvular atrial fibrillation: validation of the R(2)CHADS(2) index in the ROCKET AF (Rivaroxaban Once-daily, oral, direct factor Xa inhibition Compared with vitamin K antagonism for prevention of stroke and Embolism Trial in Atrial Fibrillation) and ATRIA (AnTicoagulation and Risk factors In Atrial fibrillation) study cohorts. *Circulation* 2013; 127: 224-32.

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