

## Further studies should evaluate multiple predispositions in heart failure prognosis

We read the article “The influence of acute pulmonary embolism on early and delayed prognosis for patients with chronic heart failure” by Gromadziński et al. [1] with interest. The authors aimed to evaluate the potential impact of acute pulmonary embolism (APE) on early and long-term prognosis in patients with chronic heart failure (CHF). They concluded that patients with CHF and acute episode of PE are characterized by a higher 6-month total and cardiovascular mortality rate following discharge from hospital compared to patients hospitalized due to acute CHF decompensation.

Heart failure is the most common disease with high mortality and morbidity rate in the worldwide [2]. Co-morbidities are important in patients with HF. Hepatic dysfunction may affect the use of treatments for HF [3]. On the other hand, drugs used to treat co-morbidities may cause worsening of HF (e.g. NSAIDs given for arthritis). After that, those used to treat co-morbidities may also interact with one another medication (e.g. beta-blockers and beta-agonists for chronic obstructive pulmonary disease and asthma). Furthermore, some co-morbidities themselves may independently cause deterioration of HF (e.g. anemia) [4]. Additionally, impairment in basic activities of daily living and lack of social support may lead to worsening of HF [5]. Finally, we think that, besides the dosage, duration of the medication and HF age can also be associated with poor prognosis of HF.

Pulmonary embolism should be kept in mind as an increasing factor for mortality in HF. Because HF patients often have multiple predispose conditions that amplify the risk of venous thromboembolism because of venous stasis, increased blood viscosity, hypercoagulability, patients' immobility, and more advanced age than that of the general population [6]. In the present study all patients with confirmed APE were discharged from hospital on anticoagulant treatment recommended for at least 3 months. The optimal duration of anticoagulant therapy can be modified according to the risk of recurrent venous thromboembolism after stopping

therapy. At this point, the existence and persistence of risk factors can provide important information to determine the treatment process. Three months of anticoagulation is sufficient if PE is provoked by a reversible risk factor like surgery. However, 6 months or more prolonged anticoagulation is indispensable in the presence of persistent risk factors [7]. In this point of view, because HF is a permanent risk factor in patients with PE, the duration of therapy is the most important condition of affecting mortality rate. The classification of patients with PE as massive, submassive or nonmassive is very important factors of the early mortality and the treatment options and prognosis.

In conclusion, PE alone is a potentially fatal disease without HF as presented in the current study. However, risk factors for HF prognosis are very complex and the pivotal roles of those risk factors deserve further large-scale prospective randomized clinical trials.

**Conflict of interest:** none declared

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