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EDITORIAL COMMENT

Inotropes for the management of acute heart failure and their renal repercussions: Are they all the same?☆

Inotrópicos na abordagem da insuficiência cardíaca aguda e sua repercussão renal – serão todos iguais?

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Heart failure (HF) is a clinical syndrome with a significant public health burden worldwide due to its high prevalence, morbidity and mortality. Its prevalence is predicted to increase by 25% by 2030.[1]

In developed countries, acute HF is the leading cause of hospitalization in individuals aged over 65 years, and is a life-threatening condition that requires urgent assessment and treatment.[2] In Portugal, HF is responsible for the highest in-hospital mortality of all cerebrovascular and cardiovascular diseases.[3]

Since it is a systemic disease, HF can cause dysfunction in various organs, particularly the kidneys. The term cardiorenal syndrome (CRS) was coined to describe a range of clinical situations involving concomitant worsening of renal and cardiac function. Studies have established the prognostic implications of this syndrome, which is associated with longer hospital stay, higher in-hospital and post-discharge mortality, and higher rehospitalization rates.[4–6] The conventional explanation for the worsening of renal function in HF – renal hypoperfusion due to low cardiac output or hypotension – has been shown to be inadequate, explaining only certain aspects of the syndrome.

Inotropic therapy is one of the most controversial subjects in the management of acute HF. Various studies have clearly demonstrated many uncertainties concerning the use of these drugs.[7–9] While they bring about hemodynamic improvement, they also increase myocardial oxygen demand, promote arrhythmias, and interact with proapoptotic mechanisms. The clinical impact of CRS in these patients led some authors to examine the potential beneficial effects of inotropes on renal function.[10,11] Inotropes such as dobutamine and levosimendan improve cardiac output and thus renal perfusion. In addition, levosimendan also has a vasodilatory effect on the renal arteries and veins, which may explain its renoprotective effect.[12]

In their study published in the current issue of the *Journal*, Madeira et al.[13] retrospectively assessed the incidence of CRS in 108 consecutive patients admitted for acute HF and requiring inotropes, dividing their sample into two groups according to the inotrope used (levosimendan vs. dobutamine), in order to determine the predictors of CRS.

The incidence of CRS was higher in the dobutamine group than in the levosimendan group (49% vs. 77%, p<0.01), and cystatin C level was the only predictor of the syndrome. In-

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hospital mortality was also higher in the dobutamine group (9% vs. 42%, p<0.01), and the presence of CRS and the inotrope used were independent predictors of in-hospital mortality. The authors also observed that recovery of renal function at discharge tended to be incomplete in patients treated with dobutamine, in contrast to patients selected for levosimendan perfusion, who had a complete recovery.

The study is interesting and contributes to the scientific evidence, seeing that knowledge of how to manage acute HF with inotropes is limited and that the study population was of real-world acute HF patients.

However, the fact that it was retrospective, and the heterogeneity of the study population, limit the applicability of the results and mean that firm conclusions cannot be drawn concerning the superiority of one inotrope or the other. The patients in the dobutamine group may have had a higher baseline risk and hence a worse initial prognosis, since they were older, with lower hemoglobin and systolic blood pressure on admission, and were more often treated with vasopressors, renal replacement therapy and mechanical ventilation.

Thus, although levosimendan is a promising drug for patients with acute HF and renal impairment, the challenge remains to explore in more detail the differences between the various inotropes available for treatment of acute HF and their potential beneficial effects.

Conflicts of interest

The author has no conflicts of interest to declare.

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