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EDITORIAL COMMENT

Biomarkers in pulmonary hypertension: An ongoing quest for better outcomes

Biomarcadores na hipertensão pulmonar: uma busca contínua por melhores resultados

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Pulmonary hypertension (PH) is a rare disease that still carries a poor prognosis in spite of recent advances in management and the availability of new therapies. With current best practice, survival at one and five years is 90% and 65%, respectively.[1]

Risk stratification plays a central role in disease management, guiding treatment strategies. At present it relies on a panel of indicators derived from clinical, exercise and hemodynamic evaluation.[2] Although this assessment is of recognized value, it is complex and sometimes subjective and inaccurate.

The development of new biomarkers has the potential to improve risk stratification. In order to be clinically useful, biomarkers must be reliable surrogates of meaningful clinical endpoints like mortality and must fully capture the net effect of treatment on clinical outcomes. Moreover, a valuable biomarker must be easy to measure and interpret, inexpensive, and provide independent information on prognosis.

In order to address this problem, various compounds have been studied in recent years and there is intense investigation of novel biomarkers.[3,4]

Potential biomarkers for PH can generally be categorized based on their association with cardiac dysfunction, vascular and endothelial dysfunction, collagen metabolism, systemic inflammation and oxidative stress, and non-cardiopulmonary organ dysfunction.

At present only two biomarkers, brain natriuretic peptide (BNP) and its N-terminal prohormone fragment (NT-proBNP), are recommended in clinical guidelines for risk stratification and follow-up in PH.[2,5]

In this issue of the *Journal*, Plácido et al.[6] analyze the role of novel biomarkers in PH and compare them to conventional NT-proBNP measurement and echocardiographic parameters. Based on their findings they propose a score that combines several biomarkers and has greater prognostic value than any of them separately.

This prospective observational study has the merit of analyzing several biomarkers in this population that have been more extensively studied in left heart failure.

Interestingly, the authors identify different temporal relationships between the biomarkers and the endpoints of mortality and death or hospitalization, suggesting that different pathogenic processes might play different roles according to disease states.

The findings of this study are in line with increasing evidence that a multiple biomarker approach could be superior to using only one biomarker.

Although promising, the proposed multi-biomarker score needs further investigation and prospective validation in larger populations before it can be used in routine practice.

The development of valid new biomarkers will increase our knowledge of the basic pathologic mechanisms behind

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vascular pulmonary disease, as well as contributing to early diagnosis and differentiation of PH from other diseases and improving risk assessment before and during treatment. In the best scenario they might even help in individualizing prevention and treatment.

Conflicts of interest

The author has no conflicts of interest to declare.

References

1. Farber HW, Miller DP, Poms AD, et al. Five-year outcomes of patients enrolled in the REVEAL Registry. Chest. 2015;148:1043–54.
2. Galiè N, Hoeper MM, Humbert M, et al. Guidelines for the diagnosis and treatment of pulmonary hypertension: the Task Force for the diagnosis and treatment of pulmonary hypertension of the European Society of Cardiology (ESC) and the European Respiratory Society (ERS), endorsed by the International Society for Heart and Lung Transplantation (ISHLT). Eur Heart J. 2009;30:2493–537.
3. Swaminathan AC, Dusek AC, McMahon TJ, et al. Treatment-related biomarkers in pulmonary hypertension. Am J Respir Cell Mol Biol. 2015;52:663–73.
4. Anwar A, Ruffenach G, Mahajan A, et al. Novel biomarkers for pulmonary arterial hypertension. Respir Res. 2016;17:88.
5. Reis A, Rocha N, Barros R, et al., Pulmonary Vascular Disease Study Group of the Portuguese Society of Internal Medicine; Pulmonary Hypertension Study Group of the Portuguese Society of Cardiology; Portuguese Societies of Pulmonology and Paediatric Cardiology. Guidelines for the management of pulmonary hypertension patients. Rev Port Cardiol. 2010;29:253–89.
6. Plácido R, Cortez-Dias N, Martins S, et al. Estratificação prognóstica na hipertensão pulmonar: valor acrescido de abordagem multi-biomarcadores. Rev Port Cardiol. 2017;36:111–25.