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Biomarkers of Right Ventricular–Pulmonary Coupling in Chronic Obstructive Pulmonary Disease

To the Editor:

Stockley and colleagues, authors of the state-of-the-art review of biomarkers of chronic obstructive pulmonary disease (COPD), are to be commended for identifying the need for a strategic change in approach to COPD biomarkers (1). It should be highlighted that a concomitant focus on biomarkers of right ventricular (RV)–pulmonary coupling is essential for comprehensive assessment and management of this systemic disease.

Prognostically significant alterations in RV shape and function have been described across the spectrum of COPD (2). However, COPD is a complex and heterogeneous disease, and RV–pulmonary interactions are variable. For instance, cor pulmonale is a well-known phenotype of RV dilation and failure in some patients with COPD, whereas cor pulmonale parvus (i.e., lower RV volumes without significant alterations in RV mass and ejection fraction) has been described in contemporary COPD (3). Washko and colleagues, in a recent publication in this journal, eloquently demonstrated that COPD subphenotyping using computed tomography measure of distal pulmonary arterial vascular morphology correlated with RV phenotype (4). Right intraventricular and right and left interventricular dyssynchrony, as assessed by strain echocardiography, have been associated with COPD and have been shown to improve with pulmonary rehabilitation (5). In patients with COPD and a pulmonary vascular phenotype associated with more severe pulmonary hypertension, biomarkers of RV–pulmonary arterial coupling would be important. The significance and need for bedside biomarkers of RV–pulmonary arterial coupling is increasingly being recognized across the breadth of cardiopulmonary disease processes (6).

A paradigm shift in biomarkers for COPD needs to incorporate assessment of RV–pulmonary coupling to better endotype the disease, assess pulmonary therapeutic targets for RV preservation, and serve as novel endpoints for clinical investigation. Refining, validating, and promoting the use of biomarkers of RV–pulmonary coupling in COPD derived from widely available imaging modalities of computed tomography and echocardiography may have the potential to yield the most dividends. ■

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Muddassir Mehmood, M.D.*
The University of Tennessee Graduate School of Medicine Knoxville, Tennessee

ORCID ID: 0000-0002-3568-0419 (M.M.).

*Corresponding author (e-mail: mmehmood@utmck.edu).

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