

Managing RV Failure: Seeing a Light at the End of the Tunnel

The appreciation of the right ventricle (RV) can be traced to the work of William Harvey with his landmark publication *Exercitatio Anatomica de Motu Cordis et sanguinis in Animabilis* in 1628, in which based on observations and experiments, Harvey had the incredible insight to differentiate the functions of the two ventricles when he stated: "So it appears that whereas one ventricle, the left, suffices for distributing the blood to the body and drawing it from the vena cava, as is the case in all animals lacking lungs, nature was compelled when she wished to filter blood through the lungs to add the right ventricle. Thus the right ventricle may be said to be made for the sake of transmitting blood through the lungs, not for nourishing them."

Though Harvey's keen observations on the human circulatory system have been credited as the beginnings of modern cardiology, the right heart system has been vastly neglected during the last half century of advances in cardiology as most of the attention has been given to the left heart. However, as the recog-

nition of the pivotal role the right heart system plays in determining outcome among patients presenting with cardio-pulmonary disease increases, the pendulum is shifting toward focusing our learning more about the mechanism, pathophysiology, evaluation, and management of right heart dysfunction.

It is my distinct honor to present this issue which highlights key principles in clinical dilemmas in the management of patients with right heart failure in the critical care setting. I am very grateful to our guest editor Deborah Levine, MD, for bringing together a renowned group of experts to collectively share their experiences in the management of this challenging group of patients. Their expertise and insight provide valuable information for clinicians at the bedside as they encounter this unique group of critically ill patients.

On a personal note, I wish to thank the *Advances* editorial board, PHA leadership and staff, our guest editors and authors, and our managing editor Deb McBride for all the tremendous support I have received during the past 2 years as editor-in-chief. Thanks to everyone's contributions, we have been able to suc-

cessfully implement several key changes within *Advances* including:

- increasing the number of editorial board members
- redesigning *Advances* as a scholarly journal
- instituting more rigorous peer review in keeping with NLM standards
- providing commentary from the editor-in-chief with each issue's eTOC
- preparing for the re-launch of research updates
- welcoming a terrific new section, PH Grand Rounds

Through all these efforts, we remain steadfast in our goal to serve the PH clinical community to help in the care and management of patients with pulmonary hypertension. As I welcome the incoming editor-in-chief, Charles Burger, MD, I would like to thank you, our readers, for all the support I have received in serving *Advances*. It has been a true honor and privilege.

Myung H. Park, MD

Associate Professor of Medicine
Director, Pulmonary Vascular Disease Program
University of Maryland School of Medicine

GUEST EDITOR'S MEMO

ICUs, PAH, RV Dysfunction, and More . . .

Despite major advances in the evaluation and management of pulmonary arterial hypertension (PAH), this disease continues to be a challenge to clinicians caring for these patients, both in PH centers as well as in the community. Nowhere are these challenges more evident than in the intensive care unit (ICU). Pulmonary hypertension (PH) and right heart dysfunction occur frequently in critically ill patients. PH can be a consequence of another acute condition (eg, pulmonary embolism), while decompensated PAH and right heart dysfunction can be the issue that brought the patient to the ICU. In either case, understanding the pathophysiology of

the right heart in this group of patients is imperative, as it significantly alters response to therapy.

This issue of *Advances in Pulmonary Hypertension* is dedicated to the evaluation, pathophysiology, and management of the ICU patient with PAH and/or right heart dysfunction or failure. We are most fortunate to have several of the top experts generously give their time to this issue.

John Granton, MD introduces the issue with an eloquent description of the pathophysiology of the right heart. He provides a methodical approach to the evaluation and therapy for right heart dysfunction and failure based on these pathophysiological principles.

Yuchi Han, MD and Jasmeet Singh, MD follow with a discussion of right ventricular (RV) metabolism and key

molecular pathways that are involved in patients with a normal RV, in the heart with comorbidities, and in those with PAH or right heart dysfunction.

Because of the inability of the RV to compensate in the setting of shock, managing severe sepsis in PAH patients is incredibly challenging. Chee Chan, MD and James Klinger, MD discuss the pathophysiology in these patients and suggest choices in initiating vasodilator therapy and pressor therapy as well as mechanical ventilation in this population.

To complete the feature articles, Drs Marc de Perrot and Tiago Machuca focus on interventional therapies used for right ventricular failure secondary to PAH. They discuss several potentially life-saving mechanical and surgical strategies for such patients.

(Continued on page 214)

PHA Resources Notepad, a Tom Lantos Community Service Project

These notepads were made so it is easier for you to tell patients about the resources the Pulmonary Hypertension

Association has to offer. Intended to be used as part of a discharge packet, circle the parts of PHA's website you are "prescribing" for your patient. Created by the Generation Hope Advisory Board and

funded by the Tom Lantos Innovation in Community Service Award. To order, go to www.phassociation.org/Store/FreeMaterials.

GUEST EDITOR'S MEMO

(continued from page 162)

Elsewhere in the issue, Victor Tapson, MD and Danny Ramzy, MD, PhD provide expert response to the question of management of right ventricular failure in the setting of pulmonary embolism. Our round table discussion among Drs Steven Mathai, Todd Bull, and Jeffrey Sager addressed additional controversial and difficult issues we often encounter with PAH patients in the ICU. Further, this issue's PHPN section offers a "virtual roundtable" among expert members regarding pump issues

as well as education regarding PAH needed by ICU nurses and staff. The patient perspective regarding Pulmonary Hypertension Care Centers is provided by Diana Ramirez and Laura Hoyt D'Anna, DPh.

Again, we would like to thank all of the authors and participants that worked so hard to make this issue successful. We would like to thank Myung Park for all of her work and commitment to this and all issues over the last two years. We also thank Deb McBride for her

daily editorial management of the publication.

We hope you will find this issue of *Advances* to be a guide for all ICU clinicians on the evaluation and management of PAH/RV dysfunction in the ICU.

Deborah J. Levine, MD

Associate Professor
Lung Transplant Pulmonologist
Director of Pulmonary Hypertension Center
University of Texas Health Science Center at San Antonio