Reviewer's report

Title: Impairment of pulmonary vascular reserve and right ventricular systolic reserve in pulmonary arterial hypertension.

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Reviewer: Darcy Marciniuk

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Domingo E, et al. Impairment of pulmonary vascular reserve and right ventricular systolic reserve in pulmonary arterial hypertension.

The cardiac and pulmonary vascular responses to dopamine/Trendelenburg volume loading were compared between 18 subjects with pulmonary arterial hypertension (PAH) and 10 control subjects. The PAH subjects were later divided into those with a greater pulmonary arterial pressure (PAP) response to DST compared to those with #5 mmHg response. PAH subjects demonstrated a lower heart rate and cardiac output response, associated with significantly greater increases in PAP and derived variables, and less cardiac reserve. The authors conclude the hemodynamic response to DST is impaired in PAH subjects, and is associated with a low pulmonary vascular reserve and RV systolic reserve. They further conclude that these responses would be associated with a poor clinical outcome.

This is an interesting and thoughtful research study that addresses an interesting physiologic issue. The study methods are appropriate and vigorous, and appropriately described. The investigators should be commended for their attention to detail.

Major Comments:

A. While it is stated that 2 years of prospective follow-up were undertaken, the only data presented to validate this statement are the 3 deaths in the 2-year follow-up time period. Additional information should be noted in the manuscript to support the assertion of a poor long-term clinical outcome. Alternatively, the conclusion should be altered and/or tempered.

B. The stratification and results from the PAH subject groups are interesting. It would be informative if the authors were able to further clinically characterize these groups (beyond the physiologic measurements provided), and offer in the manuscript further discussion/opinion regarding reason(s) for the observed differences.

Other Comments:

1. The use of abbreviations and use of symbols requires further attention. For instance, abbreviations should only be used once initially written in full ie. IVUC [Abstract, Results; and others]. Moreover, terms such as ‘echo’ [Abstract, Results] should be revised to ‘echocardiogram’ in the manuscript. In addition, there should be consistency in the use of symbols and terms such as ‘delta’ and
‘#’ in the text, tables and figures [Abstract, Results; and others]

2. While much of the manuscript is well-written, there are other parts [aspects of the Results and Discussion] that require more careful editing and attention.

3. Baseline demographic and anthropometric data should be presented. The authors should consider the addition of a traditional ‘Table 1’ listing this information. The remaining Tables and Figures are appropriate to include as presented.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests