

European Respiratory Society Annual Congress 2012

Abstract Number: 1111

Publication Number: P4436

Abstract Group: 4.1. Clinical physiology and Exercise

Keyword 1: Exercise **Keyword 2:** Pulmonary hypertension **Keyword 3:** Circulation

Title: Prognostic implications of delayed heart rate recovery from maximal-incremental exercise in patients with pulmonary arterial hypertension

Dr. Roberta Pulcheri 7782 Ramos robertapulcheri@gmail.com MD ¹, Dr. Jaquelina Sonoe Ota 7783 Arakaki jaqueota@gmail.com MD ¹, Ms. Priscila 7784 Barbosa pribfigueiredo@gmail.com ¹, Dr. Erika 7785 Treptow erikatpw@hotmail.com MD ¹, Dr. Fabricio Martins 7786 Valois fmvalois@globo.com MD ¹, Dr. Eloara Vieira Machado 7787 Ferreira eloaravmf@yahoo.com.br MD ¹, Prof. Dr Luiz Eduardo 7788 Nery lenery@uol.com.br MD ¹ and Prof. Dr J. Alberto 7794 Neder nederalb@gmail.com MD ¹. ¹ Pulmonary Function and Clinical Exercise Physiology Unit (SEFICE), Respiratory Division, Department of Medicine; Federal University of São Paulo – Paulista School of Medicine (UNIFESP-EPM), Sao Paulo, SP, Brazil, 04020-050 .

Body: Rationale: Early recovery from exercise is characterized by a marked reduction in heart rate (HR) due to sudden reintroduction of vagal tone and progressive withdrawal of sympathetic stimulation. HR recovery (HRR) is delayed in pulmonary arterial hypertension (PAH), a disabling condition associated with autonomic imbalance. Objective: To investigate the usefulness of HRR to estimate exercise impairment and prognosis in PAH patients. Methods: We evaluated 72 patients with PAH of varied aetiology (NYHA class I to IV) and 21 age- and gender-matched controls who underwent a maximal incremental cardiopulmonary exercise test (CPET) with HR being recorded up to the 5th minute of recovery. Results: HRR was consistently lower in patients compared to controls ($p < 0.05$). The best cutoff for HRR in one minute (HRR_{1min}) to discriminate patients from controls was 18 beats (AUC 0.76 [0.66-0.86], $p < 0.05$). "Normal" HRR_{1min} was associated with a range of maximal and sub-maximal variables indicative of better preserved exercise tolerance ($p < 0.05$). On a multiple regression analysis which considered only CPET-independent variables (6-minute walking distance, NYHA class and PAH treatment), HRR_{1min} was the single predictor of mortality (hazard ratio (95% confidence interval)= 1.19 (1.03-1.37); $p < 0.05$). Conclusions: Preserved HRR_{1min} (>18 beats) is associated with less impaired responses to exercise in patients with PAH. Conversely, an abnormal HRR_{1min} response has negative prognostic implications, a finding likely to be clinically useful when more sophisticated analyses provided by a full CPET are not readily available.