

INCAPACITY TO INCREASE CARDIAC OUTPUT DETERMINES 6 MINUTE WALK DISTANCE IN PULMONARY HYPERTENSION.

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INTRODUCTION: Chronic thromboembolic pulmonary hypertension (CTEPH) is a disease of elevated pulmonary artery pressure leading to the inability of the overloaded right ventricle to adapt cardiac output (CO) and systemic oxygen delivery to peripheral tissue oxygen demand. 6 minutes walk test (6MWT) is a submaximal, well tolerated but strenuous test regularly used for the assessment of PH functional status and is strongly associated to survival.

AIMS AND OBJECTIVE: To study the adaptation of CO during a 6MWT.

METHODS: We measured heart rate (HR) and CO with a rebreathing device (INNOCOR) before and directly after a 6MWT in 28 CTEPH patients. The relation between increase (after – before 6MWT) in CO (Δ CO) in response to 6MWDistance (6MWD) was plotted and different mathematical model applied to describe the relation (Akaike test).

RESULTS/DISCUSSION: The best fitting model is a polynomial cubic model, showing a small and constant Δ CO for patients walking less than 300-350 m but more rise in Δ CO is observed with increased distance. We observed a ceiling effect of the increase in CO for patients walking more than 500m. [fig.1] We notice that the rising in Δ CO occur at comparable 6MWD that is associated with better survival in pulmonary hypertension. The stroke volume (CO/HR) is not increased whatever the distance covered.

CONCLUSIONS: Ability to substantially increase CO determines 6MWD and is dependent on chronotropic response in chronic pulmonary hypertension.

