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Intensity and quality of exertional dyspnoea in patients with stable pulmonary hypertension

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The inflection in tidal volume relative to ventilation marks the onset of a large increase in dyspnoea intensity and in the selection frequency of unsatisfied inspiration as the predominant dyspnoea descriptor in patients with stable pulmonary hypertension <http://bit.ly/2JRA5bI>

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ABSTRACT Dynamic hyperinflation is observed during exercise in 60% of patients with clinically stable pulmonary arterial hypertension (PAH) and chronic thromboembolic pulmonary hypertension (CTEPH), intensifying exertional dyspnoea. The impact of dynamic changes in respiratory mechanics during exercise on qualitative dimensions of dyspnoea in these patients has not been evaluated.

26 patients (PAH n=17; CTEPH n=9) performed an incremental symptom-limited cycle exercise test. Minute ventilation (V'_E), breathing pattern, operating lung volumes and dyspnoea intensity were assessed throughout exercise. Dyspnoea quality was serially assessed during exercise using a three-item questionnaire (dyspnoea descriptors). The inflection point of tidal volume (V_T) relative to V'_E was determined for each incremental test. Changes in inspiratory capacity during exercise defined two groups of patients: hyperinflators (65%) and non-hyperinflators (35%). Multidimensional characterisation of dyspnoea was performed after exercise using the Multidimensional Dyspnea Profile.

In hyperinflators, inspiratory capacity decreased progressively throughout exercise by 0.36 L, while remaining stable in non-hyperinflators. The “work/effort” descriptor was most frequently selected throughout exercise in both types of patients (65% of all responses). At the V_T/V'_E inflection, work/effort plateaued while

“unsatisfied inspiration” descriptors became selected predominantly only in hyperinflators (77% of all responses). In the affective domain, the emotion most frequently associated with dyspnoea was anxiety.

In pulmonary hypertension patients who develop hyperinflation during exercise, dyspnoea descriptors referring to unsatisfied inspiration become predominant following the V_T/V'_E inflection. As these descriptors are generally associated with more negative emotional experiences, delaying or preventing the V_T/V'_E inflection may have important implications for symptom management in patients with pulmonary hypertension.