European Respiratory Society
Annual Congress 2012

Abstract Number: 280
Publication Number: 4725

Abstract Group: 1.4. Interventional Pulmonology
Keyword 1: COPD - management **Keyword 2:** Bronchoscopy **Keyword 3:** Experimental approaches

Title: Associations among one-year efficacy outcomes following endoscopic thermal vapor ablation (InterVapor™) for heterogeneous emphysema

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Body: Background: The understanding of interactions or associations over the long-term may assist in understanding and predicting changes over time in chronic diseases such as emphysema. The associations among various COPD efficacy endpoints are variable; however, the degree of correlation is often important in examining the consistency of the results across measures not considered redundant. Objectives: Determine the correlations of improvements in patient-reported outcomes, exercise capacity and BODE score with lung function and lobar volume reduction (LoVR) measured by CT after 1-year post-InterVapor for heterogeneous emphysema. Methods: Single-arm trial of InterVapor in patients with upper lobe emphysema. Patient criteria: FEV_1 15% - 45% predicted, age 40-75 years, RV>150%, TLC>100%, 6 minute walk distance (6MWD)>140 m, DLCO>20%, previous pulmonary rehabilitation. Endpoints included: spirometry, body plethysmography, SGRQ, mMRC dyspnea, 6MWD and LoVR (CT). Pearson correlation coefficients were calculated for associations of changes from baseline to 12 months. Results: 44 patients received InterVapor. Mean age: 63 years, men 50%, FEV_1 0.86 (31% predicted), RV 237% predicted, DLCO 35% predicted, SGRQ 59 units, 6MWD 300 m, mMRC 2.9.

	SGRQ	BODE	mMRC	6MWD
FEV1	-0.37*	-0.67*	-0.47*	0.42*
FVC	-0.26	-0.40*	-0.33*	0.31
RV	0.21	0.54*	0.45*	-0.35*
TLC	-0.02	0.32	0.27	-0.05
FRC	0.15	0.49*	0.41*	-0.34
IC	-0.21	-0.27	-0.23	0.37
LoVR	0.31	0.53*	0.52*	-0.47*

*$p<0.05$

Conclusion: Among lung function tests, FEV_1 appeared to correlate the strongest with health outcomes, followed by RV and FRC at one year. The strong correlation of outcomes with LoVR are consistent with the proposed mechanism of action.