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Title: Lung volume reduction coil treatment restores lung compliance in patients with homogeneous emphysema

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Body: Rationale: Bronchoscopic Lung Volume Reduction Coil (LVRC) treatment has been shown to improve pulmonary function, exercise performance and QOL in patients with heterogeneous emphysema. The mechanism of action is yet not fully elucidated. LVRC has not been prospectively investigated in homogeneous emphysema before. Aim: To investigate safety, efficacy and mechanisms of action of LVRC treatment in patients with homogeneous emphysema. Methods: In this single-arm, open-label study, homogeneous emphysema patients ($\leq 15\%$ difference in destruction < -950 HU between ipsilateral lobes) bronchoscopically received max 12 LVRCs (PneumRx, USA) in both upper lobes. Tests were performed at baseline and at 6 months follow-up. Results: 10 patients with a mean age of 56.2 (± 7.6) yrs, FEV1 23.4 (± 4.3) %pred, RV 275 (± 47) %pred, 6MWD 307 (± 107) m were treated. At 6 months follow-up two COPD exacerbations were recorded as SAE. After 6 months Δ FEV1, %pred was +16.2% (± 21.8) $p=0.035$; Δ FVC, %pred: +11.3% (± 14.8) $p=0.005$; Δ RV, L: -0.66 (± 0.41) $p=0.0004$; Δ RV/TLC, %: -7.3 (± 4.6) $p=0.0003$; Δ Raw, kPa*s/L: -19.3% (± 21.6) $p=0.004$; Δ 6MWD, m: +52.9 (± 40.3) $p=0.002$; Δ SGRQ, points: -11.5 (± 11.7) $p=0.0127$. Forced oscillation at 5-20 Hz, kPa/L/s improved from 0.36 (± 0.17) to 0.25 (± 0.11) $p=0.018$, and the responder dynamic lung compliance from 1.77 L/kPa (± 0.57) to 2.47 L/kPa (± 0.64) $p=0.003$. Conclusion: The benefit of LVRC treatment is not limited to patients with heterogeneous emphysema; it significantly improves pulmonary function, exercise capacity and QOL also in patients with homogeneous emphysema. The coils probably exert their effect by improving lung compliance, thereby reducing airway resistance and improving hyperinflation.