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Title: Heterogeneous and homogenous emphysema both respond to lung volume reduction coil treatment

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Body: Rationale: The Lung Volume Reduction Coil (LVRC, PneumRx USA) is a bronchoscopic device for the treatment of patients with heterogeneous emphysema. In this study we investigated if the LVRC has potential in the treatment of homogenous emphysema. Methods: Using a post-hoc blinded CT analysis we tested the impact of degree of heterogeneity on 6-month outcome in patients after bilateral LVRC treatment in two recent trials (NCT01220908, NCT01328899). First, digital lobar CT emphysema scores were assessed using the % destruction below -950HU for both lungs. <25% difference between the ipsilateral lobes of both lungs was regarded homogeneous. Secondly, a visual pattern approach was used grading from 0 (no damage) to 4 (bullous disease). A difference of ≤ 1 point in one of the lungs was regarded as homogeneous disease. Results: 53 patients, 61.8y (± 7.4), FEV1 33.8%pred (± 9.8), RV 246%pred (± 53) RV/TLC 60.6 (± 9.1) were analyzed. Digital CT analyses identified 15 homogenous cases with a Δ FEV1 +7.8% (± 11.9), Δ RV -0.77L (± 0.55), Δ 6MWD +41m (± 85), Δ SGRQ -13.4pts (± 11.3) and 38 heterogeneous cases with a Δ FEV1 +15.9% (± 31.8), Δ RV -0.48L (± 0.83), Δ 6MWD +42m (± 80), Δ SGRQ -10.9pts (± 15.3). The visual approach resulted in 34 homogeneous cases with a Δ FEV1 +10% (± 16), Δ RV -0.49L (± 0.66), Δ 6MWD +44m (± 85), Δ SGRQ -9.6pts (± 12.9), and 29 heterogeneous cases with a Δ FEV1 +18.3% (± 37), Δ RV -0.61L (± 0.85), Δ 6MWD +42m (± 59), Δ SGRQ -13.4pts (± 15.3). Only FEV1 was different ($p < 0.01$) between the two phenotypes. Conclusion: LVRC treatment also results in significant and clinically relevant

improvements in patients with homogenous emphysema. These results warrant a prospective evaluation on LVRC in homogenous disease.