

Efficacy of targeted lung denervation on patients with moderate to severe COPD

Dirk-Jan Slebos¹, Karin Klooster¹, Coenraad Koegelenberg², Johan Theron³, Dorothy Steyn², Martin Mayse⁴, Chris T Bolliger^{2,3}

¹ University of Groningen, Department of Pulmonary diseases, University Medical Center Groningen, Groningen, The Netherlands.

² Stellenbosch University, Department of Medicine, Faculty of Medicine and Health Sciences, Cape Town, South Africa.

³ Panorama MediClinic, Cape Town, South Africa.

⁴ Holaira, Inc., Minneapolis, USA.

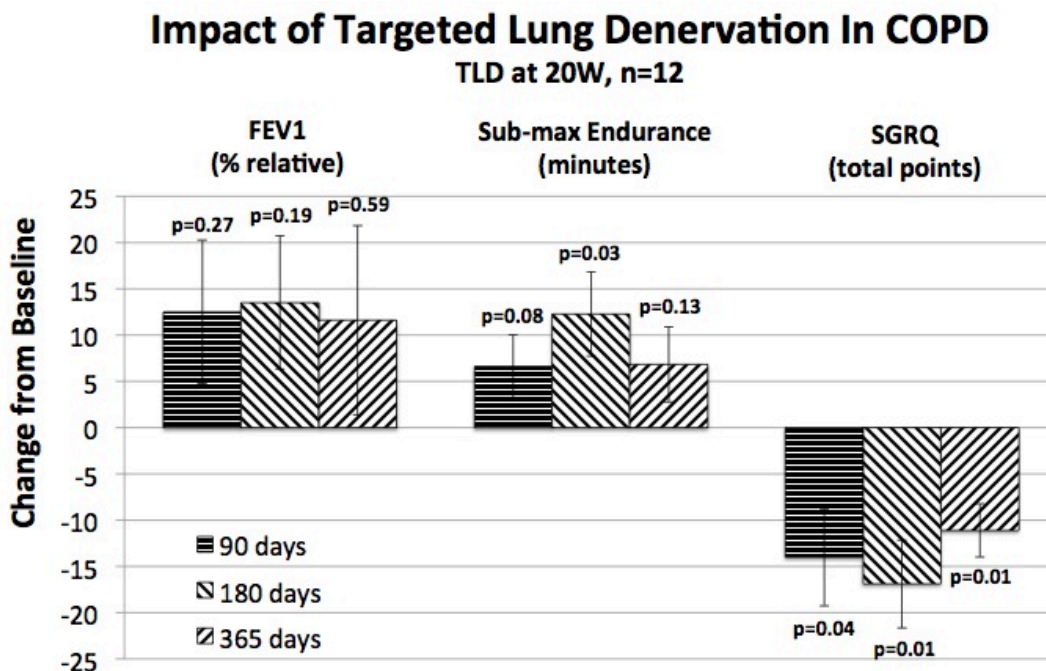
Publication: European Respiratory Journal. Volume 44 / Supplement 58 / September 2014

Background: Acetylcholine derived from parasympathetic nerves is a well-validated target for treatment of patients with COPD. Targeted lung denervation (TLD) is a novel bronchoscopic therapy that ablates parasympathetic pulmonary nerves along the main bronchi.

Aim: Evaluate impact of TLD on COPD patients.

Methods: A first-in-human, prospective, multicenter, study in COPD patients ($FEV_1/FVC < 0.70$; FEV_1 30-60% predicted; >15% reversible to ipratropium) was performed (NCT01483534). TLD was performed using a lung denervation system (Holaira, Inc., USA) at either 15W or 20W energy doses following baseline assessment of pulmonary function, exercise testing and quality of life off bronchodilators. This assessment was repeated up to 365 days after TLD.

Results: Twenty-two patients were treated in a staged fashion, 12 (FEV_1 33.8 ± 9.4 % predicted, 58.3% male, age 62.9 ± 11.4 yrs) at a 20W energy dose and 10 (FEV_1 34.5 ± 6.3 % predicted, 40% male, age 64.4 ± 8.9 yrs) at 15W. Change from baseline in FEV_1 , submaximal exercise endurance, and SGRQ for the 20W group are shown as mean \pm SEM in the Figure. When compared, the 20W group has a larger improvement on these parameters than the 15W group.



Conclusion: TLD provides durable bronchodilation, improvements in exercise endurance and quality of life out to 1 year. This is the first study reporting bronchoscopic nerve ablation for the treatment of COPD. A large-scale randomized study is planned.