

The use of functional respiratory imaging in COPD, towards precision medicine

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Abstract

An increasing number of patients is diagnosed with Chronic Obstructive Pulmonary Disease (COPD), a very debilitating chronic disease caused by cigarette smoke and air pollution. At the same time, a cure does not exist, and the therapeutic options are limited. Spirometry, the gold standard lung function test lacks the sensitivity to phenotype the patient in light of treatment optimization and therefore requires long and large clinical trials. In this presentation we will present Functional Respiratory Imaging or FRI. FRI uses conventional, low dose HRCT scans and converts them into accurate representations of different lung structures. By using methods from aerospace engineering the static images can be made functional. FRI provides regional information about lung structure and function. The technology has been used extensively in clinical trials to understand the mode of action and heterogeneity of treatments such as bronchodilators, vasodilators, anti-inflammatory drug and a range of medical devices (non-invasive ventilation, lung volume reduction, etc). The enhanced signal to noise ratio of FRI compared to spirometry allows for a significant reduction in the study sample size and duration. Consequently, FRI aims to elucidate the heterogeneity of the disease in an individual patient and subsequently match this patient with the optimal treatment. In the presentation, we will pay special attention to the potential underlying vascular abnormalities in COPD, and we will draw parallels with the current COVID19 pandemic.

Biography

Jan De Backer graduated from Delft University of Technology, The Netherlands as aerospace engineer. He attained an MSc degree in aerodynamics and specialized in applied biomedical computational fluid dynamics leading to a PhD from the University of Antwerp, Belgium. He is an alumnus of the MBA programs at London Business School, London and Columbia Business School, New York. He has received several awards for his innovative research in the field of airway modeling in respiratory and sleep medicine. His work has been published in international journals. Jan De Backer founded Fluidda in 2005 and he has held the position of Chief Executive Officer since 2007.



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