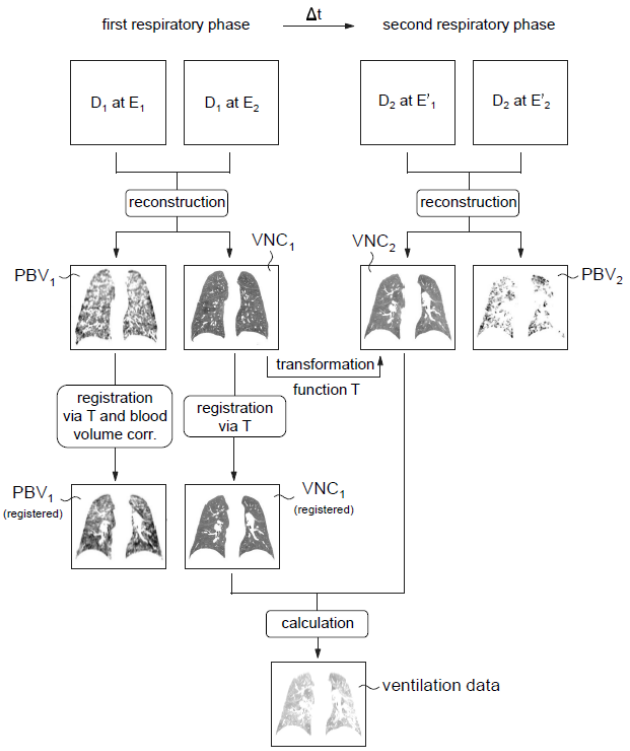
Time-efficient assessment of pulmonary function via CT with low radiation doses

Reference Number TO 15-00565

Challenge

Computed tomography (CT) imaging has become the modality of choice for the anatomic evaluation of the lung, however it lacks the capability to readily provide complex functional data such as regional perfusion blood volume (PBV) or virtual non-contrast (VNC) data. At present, obtaining regionally comparable anatomical as well as functional (perfusion/ventilation) information of a respiratory system requires repeated CT imaging which is time-consuming and often associated with a high radiation dose for the patient. Thus, it remains a challenge to reduce radiation doses associated with data assessment of pulmonary function.



Technology

Here we present a novel method for processing CT imaging data sets retrieved of a patient's respiratory system by dual-energy computed tomography (DECT). The technology includes a novel algorithm to process the acquired data and enables reconstruction of PBV and VNC data during inhalation and expiration of the patient. Registration and transformation of the PBV and the VNC data displays the regional ventilation and allows the functional assessment of the patient's respiratory system. In conclusion, the technology comprises a reliable and time-efficient method to assess the pulmonary function without repeated CT application and avoidable radiation exposure of the patient.

Commercial Opportunity

In-licensing or collaboration for further development is possible.

Developmental Status

A small-scale clinical study with 70 patients has been performed at Hanover Medical School.

Medizinische Hochschule Hannover

Licensing Contact
Dr. Torben Söker
Technology Manager
T: +49 511 532 8918
soeker@ascenion.de

Ascenion GmbH
Herzogstraße 64
D-80803 München
info@ascenion.de
www.ascenion.de

Patent Situation

Patents have been granted in Europe (EP 3545845B1, national validation in DE, CH, FR, GB, IT and NL) and USA (US 11,282,243B2) with priority of 2018.
CA patent application (CA 3,090,202) based on PCT/EP2019/057874 with priority of 2018 is pending.

Further Reading

Scharm SC, Schaefer-Prokop C, Winther HB, Wacker FK, Shin HO et al. 2023. Regional Pulmonary Morphology and Function: Photon-counting CT Assessment. Radiology. 308(1):e230318. doi: 10.1148/radiol.230318.

Scharm SC, Vogel-Claussen J, Schaefer-Prokop C, Wacker FK, Shin HO et al. 2021. Quantification of dual-energy CT-derived functional parameters as potential imaging markers for progression of idiopathic pulmonary fibrosis. Eur Radiol. 31(9):6640-6651. doi: 10.1007/s00330-021-07798-w.

Licensing Contact
Dr. Torben Söker
Technology Manager
T: +49 511 532 8918
soeker@ascenion.de

Ascenion GmbH
Herzogstraße 64
D-80803 München
info@ascenion.de
www.ascenion.de