

Reliability of computed tomography (CT) quantitative analysis in lung transplantation follow-up.

C Salito¹, F Pennati¹, V Rossetti², M Pappalettera², P Tarsia², M Carrinola³, M Montoli³, P Biondetti⁴, M Nosotti³, A Palleschi³, A Aliverti¹

¹Dip. Elettronica, Informazione e Bioingegneria- Politecnico di Milano, Milano, Italy

²Unità Operativa di Broncopneumologia, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico di Milano, Milano, Italy

³Unità Operativa di Chirurgia Toracica, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico di Milano, Milano, Italy

⁴ Unità Operativa Radiologia, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico di Milano, Milano, Italy

Functional analysis of CT imaging in lung-transplanted patients is an emerging tool for the interpretation of parenchymal (patterns) evolution after lung transplantation (LT). Aim of this study was to determine the trends of pulmonary function (PFT) indices and quantitative CT parameters within 1-year follow-up. We prospectively collected PFT parameters (FEV1, FVC) and inspiration/expiration CT scans of LT patients at standard time-points (3-6-12 months). Specific gas volume (SV_g, ml/g) was measured on CT images as previously described (Salito et al, Radiology 2009; Aliverti et al, ERJ 2013). Selected quantitative indexes were lung volume at inspiration (V_{insp}) and the difference between inspiration and expiration SV_g normalized on expiration SV_g: ΔSV_g/SV_g EXP. Patients who experienced uneventful 12 months postoperative course after bilateral LT were included. Fifteen patients completed the trial. As expected, FEV1 and FVC values significantly improved at each time-point until the 12-month check. Correspondingly, V_{insp} and ΔSV_g/SV_g EXP increased in the same fashion with a trend toward healthy values (Fig1, bottom panels). This preliminary trial evidenced the reliability of specific gas volume analysis as an attractive quantitative CT parameter of lung function after LT. Future studies are requested to verify the accuracy of specific gas volume analysis in the evaluation of patients with lung allograft dysfunction.

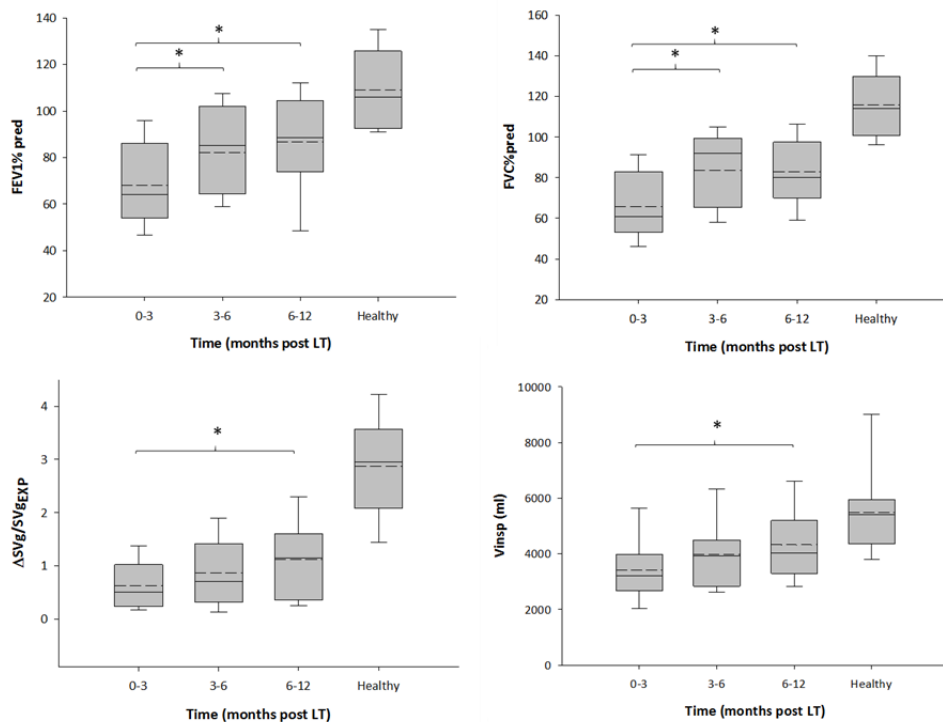


Figure 1. Changes in pulmonary function test results (FEV1%pred and FVC%pred, top panels) and quantitative CT parameters (ΔSV_g/SV_g^{EXP} and V_{insp}, bottom panels) in 1-year follow-up. * p<0.05.

Session:

From donor lung selection and organ preservation to lung transplant outcome (Poster Discussion)

Date/Time:

Sunday, September 10, 2017 / 14:45-16:45

Room:

Amber 5 + 6 (South)

Category:

Transplantation

Keywords:

Treatments, Imaging, Biomarkers