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| **Baseline small airway function correlates with lung function decline following hematopoietic stem cell transplant**  |
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| **Introduction/Aim:** Following allogeneic haematopoietic stem cell transplantation (allo-HSCT), up to 20% of patients develop pulmonary graft vs host disease. We aimed to determine whether small airway function pre allo-HSCT, measured by oscillometry and multiple breath nitrogen washout (MBNW), correlates with changes in spirometry, lung volumes and DLCO following allo-HSCT.**Method:** In 39 patients**,** oscillometric respiratory system resistance (R5) and reactance (X5), and MBNW parameters Lung Clearance Index (LCI), Scond and Sacin (global, conducting and acinar ventilation heterogeneity, respectively) were measured pre allo-HSCT. Spirometry, body plethysmography and gas transfer was measured prior to, and at 3, 6, 9 and 12 months after allo-HSCT. Correlations between baseline oscillometry and MBNW parameters, and post allo-HSCT changes in spirometry, volumes and diffusion were examined using Spearman’s correlation co-efficient.**Results:** Baseline FEV1, FVC and FEV1/FVC mean z-score ± SD were -0.08 ± 1.11, 0.1 ± 1.06 and -0.26 ± 1.07 respectively. At 1 year, FEV1 declined by 10% or more in 4/22, FVC in 3/22 and FEV1/FVC demonstrated obstruction (<-1.64 z-score) in 2/22. Baseline LCI was abnormal in 28/39, Scond in 22/39, Sacin in 14/39, R5 in 1/39 and X5 in 3/39 patients. Worse LCI predicted greater % fall in DLCO at 3 months (r=-0.39, p = 0.027), but not at other timepoints. Worse Scond predicted less fall in FEV1 at 3 and 6 months post-HSCT (r = 0.37, p = 0.036 and r = 0.43, p = 0.014, respectively), but not at 9 and 12 months. There were no significant correlations between Sacin, R5 or X5 and lung function changes, post-HSCT.**Conclusion:** Prior to HSCTthe majority of patients had abnormal small airway function measured by MBNW. Worse global ventilation heterogeneity predicted greater decline in gas transfer, whereas worse conducting airway heterogeneity predicted less decline in FEV1.**Nomination for New Investigator Award****Key Words:** Multiple Breath Nitrogen Washout, Oscillometry, Graft Versus Host  |