European Respiratory Society
Annual Congress 2013

Abstract Number: 2362

Publication Number: P4194

Abstract Group: 5.2. Monitoring Airway Disease

Keyword 1: Monitoring **Keyword 2:** Nitric oxide **Keyword 3:** Spirometry

Title: Lung function and airway inflammation monitoring in patients undergoing allogeneic hematopoietic stem cell transplantation

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Body: Background: Patients who underwent hematopoietic stem cell transplantation (HSCT) for haematological malignancies may develop acute and chronic pulmonary complications including obliterans bronchiolitis. Methods: The purpose of our study was to monitor lung function and airway inflammation in 183 patients who underwent HSCT. We prospectively measured detailed pulmonary function, exhaled nitric oxide (FeNO) and performed induced sputum before HSCT and after 3, 6, 12, 24 and 36 months. Results: Kaplan Meier analysis gave a median survival for the whole population of 1007 days (13-1095). Overall there was a progressive decrease of FEV1, FVC, TLC and RV values, which was significant after 2 years. Similarly corrected DLCO for haemoglobin content progressively decreased with significant change after one 1 year. By contrast there was no change in FeNO value over time. As far as sputum cell count is concerned there was a progressive increase of total sputum cell number, which was significant at 3 years. In those patients who had a complete sputum monitoring for 3 years, sputum neutrophil count significantly raised after 2 years. Conclusions: In patients who survived after HSCT there was a progressive loss in lung function featuring a restrictive pattern associated with raised neutrophilic airway inflammation.