CXCR4+ granulocytes reflect fungal cystic fibrosis lung disease.

Abstract:
Cystic fibrosis airways are frequently colonised with fungi. However, the interaction of these fungi with immune cells and the clinical relevance in cystic fibrosis lung disease are incompletely understood. We characterised granulocytes in airway fluids and peripheral blood from cystic fibrosis patients with and without fungal colonisation, non-cystic fibrosis disease controls and healthy control subjects cross-sectionally and longitudinally and correlated these findings with lung function parameters. Cystic fibrosis patients with chronic fungal colonisation by Aspergillus fumigatus were characterised by an accumulation of a distinct granulocyte subset, expressing the HIV coreceptor CXCR4. Percentages of airway CXCR4(+) granulocytes correlated with lung disease severity in patients with cystic fibrosis. These studies demonstrate that chronic fungal colonisation with A. fumigatus in cystic fibrosis patients is associated with CXCR4(+) airway granulocytes, which may serve as a potential biomarker and therapeutic target in fungal cystic fibrosis lung disease.