European Respiratory Society
Annual Congress 2013

Abstract Number: 3414

Publication Number: P606

Abstract Group: 3.2. Airway Cell Biology and Immunopathology

Keyword 1: COPD - mechanism **Keyword 2:** Inflammation **Keyword 3:** Cell biology

Title: Neutrophil numbers are decreased in bronchial biopsies from patients with COPD

Dr. Sukhwinder Singh 20575 Sohal sssohal@utas.edu.au [1], Mr. Daniel 20576 Tan dtan1@postoffice.utas.edu.au [1], Prof. Hans Konrad 20577 Muller hkmuller@bigpond.com MD [1], Dr. David 20578 Reid D.E.C.Reid@utas.edu.au MD [2] and Prof. Eugene Haydn 20579 Walters Haydn.Walters@utas.edu.au MD [1]. [1] NHMRC Centre of Research Excellence for Chronic Respiratory Disease, University of Tasmania School of Medicine, Hobart, Tasmania, Australia, 7000 and [2] Iron Metabolism Laboratory, Queensland Institute of Medical Research, Brisbane, Queensland, Australia, 4006 .

Body: Background: We have previously reported that total cellularity of the lamina propria (LP) in COPD is decreased. In this study we sought evidence for neutrophils contributing to this decreased LP cellularity in COPD. We were also interested in whether they may be implicated in bronchodilator responsiveness (BDR) in COPD. Objective: To assess the number of neutrophils in various compartments of endobronchial biopsies (Ebb) from COPD current smokers (CCS) and ex-smokers (CES), normal lung function current smokers (NLF-S) and normal controls (NCs). Methods: Ebb sections from 16 NLF-S, 13 CCS, 15 CES and 24 NCs were immuno-stained for neutrophil elastase (NE) antibody. Numbers of neutrophils were separately counted in the airway epithelium, reticular basement membrane (Rbm), LP and smooth muscle (SM). Neutrophils within vessels in LP were also counted. We used non-parametric statistics. Results: Compared to NCs, neutrophils were decreased in epithelium of CCS ($p<0.04$) but not in CES or NLF-S. Rbm neutrophils were decreased in CCS and CES ($p<0.008$) compared to NCs and NLF-S. Similarly, total number of neutrophils in LP were decreased in CCS compared to NCs and NLF-S ($p<0.007$) but not in CES. Vessel associated neutrophils were also decreased significantly in CCS compared to NCs and NLF-S ($p<0.007$) but not in CES. Compared to NCs, neutrophils decreased in the SM of rest of the groups ($p<0.005$). Conclusions: Our study suggests that airway wall neutrophils are decreased in COPD. Since blood vessels are decreased in the LP this may be contributing to decreased cellularity, but it is most likely that they are being rapidly cleared into the airway lumen. SM-related neutrophils are not related to BDR.