(median: 2304, IQR: 1519–2723. $p=0.0238$, $p=0.038$ respectively) (figure 1).

Conclusion Eosinophils in COPD show enhanced migration towards IL-5 and eotaxin. Whether this is a mechanism underlying T2 high COPD requires further investigation.

P55 EXPLORING RHINOVIRUS-INDUCED ER STRESS IN BRONCHIAL AIRWAY EPITHELIAL CELLS

KL Bradley, CA Stokes, LC Parker, AM Condliffe. *The University of Sheffield, Sheffield, UK*

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Rational and Hypothesis Human Rhinovirus (HRV) infections are major contributors to the increased morbidity burden associated with asthma and COPD acute exacerbations. There are currently no effective treatments or vaccines targeting exacerbations, therefore understanding the host-virus interactions that drive cellular damage will help identify potential therapeutic targets. Viral infections alter the airway environment through increased production of inflammatory mediators, defensive factors and viral proteins. This Results in the upregulation of cellular processes such as the unfolded protein response (UPR), an ER (endoplasmic reticulum) stress pathway that acts to alleviate ER stress caused by increased demands on protein synthesis. In the event that UPR fails to restore cellular homeostasis, pro-apoptotic pathways are activated. Many viruses induce ER stress and have evolved mechanisms to modify UPR to promote their own replication. Interestingly, the mechanisms and consequences of HRV-induced ER stress in bronchial epithelial cells have yet to be explored. We therefore hypothesised that HRV infection induces and manipulates ER stress processes within bronchial epithelial cells.

Objectives To explore the mechanisms and consequences of HRV-induced ER stress within bronchial epithelial cells.

Methods The immortalised bronchial epithelial cell line, BEAS-2B was infected with HRV for 1 hour at MOI 1.5. Induction and subcellular localisation of ER stress markers (GRP78 and ATF4) were measured at various time points by western blotting and confocal microscopy. Tunicamycin (a known ER stress inducer) and filtered HRV were included as positive and negative controls respectively.

Findings Virally infected BEAS-2B cells induced ER stress as evidenced by the significant induction of the UPR chaperone protein, GRP78 at 24 hour. ATF4, a transcriptional activator of UPR target genes, redistributed from a cytoplasmic location to perinuclear regions, as assessed by immunofluorescence and confocal microscopy. Translocation was seen from as early as 1 hour following treatment with Tunicamycin, but this response was relatively delayed in HRV-infected BEAS-2B cells, with ATF4 redistributing to perinuclear regions from 8 hour post infection.

Conclusion Our data demonstrate for the first time HRV-induced ER stress within bronchial epithelial cells, and suggest that HRV may manipulate ER stress pathways to facilitate its own replication.

P56 HUMAN RHINOVIRUS IMPAIRS PHAGOCYTOSIS OF HAEMOPHILUS INFLUENZAE IN ALVEOLAR MACROPHAGES IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

LJ Finney, K Belchamber, S Kemp, G Donaldson, P Mallia, SL Johnston, JA Wedzicha. *Imperial College, London, UK*

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Introduction COPD exacerbations are the main cause of hospital admission and death in COPD. Respiratory viruses are identified in over half COPD exacerbations with human rhinovirus (HRV) being the most commonly detected. Secondary bacterial infection is associated with prolonged exacerbations, higher rates of hospital admission and increased symptom severity. Our group have previously shown that secondary bacterial infection in HRV induced COPD exacerbations is driven by an outgrowth of *Haemophilus influenzae*.

Hypothesis We hypothesised that HRV may impair phagocytosis of bacteria by alveolar macrophages which may lead to secondary bacterial outgrowth in COPD exacerbations.

Methods Bronchoscopy was performed on participants of the London COPD cohort and healthy controls. Alveolar macrophages were obtained by bronchoalveolar lavage. Alveolar macrophages were incubated with HRV at a multiplicity of infection (MOI) of 5 for 24 hours or media control. Phagocytic capacity was assessed by incubating with fluorescently labelled heat killed *Haemophilus influenzae* or *Streptococcus pneumoniae* for 4 hours. Uptake was measured in Relative Fluorescent Units (RFU) using a fluorimeter.

Results Alveolar macrophages were obtained from 14 COPD patients and 9 healthy controls. HRV significantly impaired phagocytosis of *H. influenzae* by alveolar macrophages in patients with COPD (HRV median 0.97 (0.50–2.17 interquartile range) RFU $\times 10^3$ vs media control median 1.38 (0.70–2.50 interquartile range) RFU $\times 10^3$ $p<0.05$) but did not impair phagocytosis of *S. pneumoniae*. HRV did not impair phagocytosis in alveolar macrophages from healthy controls. Baseline phagocytic capacity of *H. influenzae* was impaired in COPD patients compared to healthy controls (COPD 1.59 ± 1.31 RFU $\times 10^3$ vs healthy control 3.81 ± 1.82 RFU $\times 10^3$). Phagocytosis of *H. influenzae* correlated with worsening FEV1 percent predicted in COPD ($R^2=0.452$ $p<0.05$).

Conclusions The presence of HRV impaired phagocytosis of *H. influenzae* in alveolar macrophages from patients with COPD but not healthy controls. This may contribute to secondary bacterial infection in COPD exacerbations.

P57 SOLUBLE RECEPTOR FOR ADVANCED GLYCATION END-PRODUCTS (SRAGE) IN PATIENTS WITH COPD: THE ERICA STUDY

R Siraj, TM McKeever, L Buss, D Mohan, K Maki-Petaja, J Forman, CM McEniery, J Cheryian, N Gale, JR Cockcroft, PM Calverley, W MacNee, B Miller, R Tal-Singer, M Polkey, IB Wilkinson, CE Bolton. *The University of Nottingham, Nottingham, UK*

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Background Advanced glycation endproducts (AGE) in patients with chronic obstructive pulmonary disease (COPD) has been considered in the pathology of the disease and as a biomarker of emphysema severity. In addition, AGE has been implicated in cardiovascular (CV) disease, a common comorbidity in COPD. Whether the soluble receptor for AGE (sRAGE) predicts CV status in COPD is unclear.

Objective The aim of this study was to assess the associations between sRAGE and measures of both lung and CV function in patients with COPD from the ERICA cohort.

Methods Patients with confirmed COPD performed spirometry, blood pressure, aortic pulse wave velocity (PWV), carotid intima media thickness (CMT) at clinical stability. Blood for sRAGE was taken.

Results Of the 729 subjects in ERICA, 677 patients had a sRAGE result. 417 patients were male; mean (SD) age was 67.4 (7.8) years and 31% were current smokers. There was a weak association of sRAGE with age ($r=0.16$, $p<0.001$), FEV₁% predicted ($r=0.12$, $p<0.05$) and FEV₁/FVC ($r=0.15$, $p<0.001$). There was no difference in sRAGE in current or ex-smokers. In multiple linear regression, a lower sRAGE was associated with more severe lung function: FEV₁% predicted, (B 4.3 [95% CI 1.6, 6.8, $p=0.0012$]). No significant relationship was observed between sRAGE and cardiovascular variables: aortic PWV ($p=0.418$) and CMT ($p=0.596$) in the multivariate models. sRAGE in those with concurrent presence of CV disease, diabetes or cerebrovascular disease or not was not different ($p=0.579$).

Conclusion Despite literature supporting the role of AGE in both lung and CV disease, there was no apparent association of sRAGE with CV status in patients with COPD in the ERICA cohort. There were associations with spirometry variables of FEV₁% predicted and FEV₁/FVC.

Respiratory medicine: common problems, new insights

P58 A QUALITATIVE AND QUANTITATIVE ASSESSMENT OF PATIENTS' ATTITUDES TO PULMONARY TARGETED ANTIBIOTICS IN BRONCHIECTASIS

¹J Davison, ¹D McEvoy, ¹G Davies, ²R Lee, ²T Rapley, ²A De Souza. ¹Freeman Hospital, Newcastle upon Tyne, UK; ²Newcastle University, Newcastle upon Tyne, UK

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Background Bronchiectasis is a chronic lung condition commonly affecting adults in middle to later years. Quality of life can be poor with a chronic, productive cough, dyspnoea and significant fatigue. Treatments aim to reduce symptoms, exacerbation frequency and severity, preserve lung function and improve health related quality of life. Regular, often twice daily nebulised antibiotics are commonly used in managing bronchiectasis. This patient population typically has severe bronchiectasis requiring multiple other medications. Little is known on patients' views and preferences for such therapies. We aimed to assess this and define patient preferences and experiences.

Methods We conducted three focus groups and three single interviews to define patients' experience of nebulised antibiotics. 19 patients and/or carers attended focus groups providing in-depth information of lived experience using inhaled

Abstract P58 Figure 1 I would prefer an inhaler to a nebuliser.

antibiotics. Thematic data analysis (TA) was used to derive a patient experience survey and a further 120 adult bronchiectasis patients completed surveys.

Results Thematic analysis of the focus group data identified that many patients found nebulised therapy an imposition on their daily routine and this impaired adherence. Reducing treatment burden/time administering therapy was important. Others reported that nebulisation time was a period of rest, often incorporated into daily routines. The survey data showed although 70% of those currently taking nebulised antibiotics found them easy/very easy to administer, 10% found these hard/very hard to administer. 20% found taking the nebuliser in front of others "uncomfortable". When nebulising, 47% excluded themselves in a separate room on a daily basis. 53% stopped nebulised therapy during vacations. If an inhaler that was as effective as nebulised therapy at preventing exacerbations was available 76% strongly agreed/agreed that they preferred an antibiotic delivered by an inhaler over a nebuliser if it was as effective at preventing exacerbations. 16% stated a preference for nebulised. Notably, only 10% wished to remain on nebulised therapy.

Conclusions Bronchiectasis patients do not fully adhere with current treatments based upon treatment burden, life experience and lay knowledge. Inhaled antibiotics via dry power devices are quicker and easier to use and preferred by patients providing they were at least as effective as current nebulised treatments.

P59 HOME BRONCHIECTASIS SERVICE: A SAFE AND CLINICALLY EFFECTIVE MODEL FOR MANAGING INFECTIVE EXACERBATIONS OF BRONCHIECTASIS IN THE COMMUNITY

K Cobb, E Jennison, J Graves, J Richards. Dorset County Hospital, Dorchester, UK

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Introduction The British Thoracic Society states that services for people with bronchiectasis should include the provision of home intravenous antibiotic therapy for exacerbations in selected patients.¹ This fits with the National objective of managing patients in the community. This should result in financial gains and improved patient outcomes. Our 'Acute Hospital at Home' (AHAH) service, is managed by a multidisciplinary team including Medical Consultants, Microbiologists, Nurses and Physiotherapists. There is regular Consultant review of patients via virtual ward rounds, and patients can be visited at home if required. Our service has the added benefit of home physiotherapy to reinforce the active cycle of