technology. MiRNA was isolated from these exosomes and profiled using a miRNA PCR assay. Demographic and clinical data was extracted from clinical records. IPF patients were stratified by radiological severity, GAP scoring and rate of progression.

Results Exosomes isolated from IPF patients demonstrated decreased fold regulation in antifibrotic miRNA such as miR-141 and miR-29 in addition to increases in fibrogenic miRNA such as miR-7 when compared to healthy controls. The degree of up regulation in miR-7 correlates significantly with stratified burden of disease. Interestingly down regulation of miR-155 was also found which has been previously associated with up regulation in mice fibrosis models. Patients had a median follow up of 31 months (IQR 17–43). There was a significant correlation with regards to up regulation of miR-125b with milder disease defined by the GAP score and preservation of FVC.

Conclusion This data identifies novel biomarkers that may provide insights into the natural history and pathogenesis of the disease. Furthermore miR-7 and miR-29 have been implicated in extracellular matrix remodelling with target genes including ECM proteins such as collagens, fibrillins and elastin. Inhibiting up regulated miRNA or supplementing down regulated miRNA may be potential therapeutic targets.

REFERENCE

1 Jiang X, Tsitsiou E, Herrick SE, *et al*. MicroRNAs and the regulation of fibrosis. *FEBS J*. 2010;**277**:2015–2021

COPD weighs heavy on the heart

S121 CO-MORBIDITY AND PNEUMONIA RISK IN COPD PATIENTS: A POPULATION DATABASE ANALYSIS OF PRIMARY CARE PATIENTS

[1]N Williams, [2]NA Coombs, [3]L Rigge, [2]L Josephs, [4]M Johnson, [2]DM Thomas, [5]TMA Wilkinson. *[1]Southampton NIHR Respiratory Biomedical Research Unit, University Hospital Southampton NHS Foundation Trust, Southampton, UK; [2]Primary Care and Population Sciences, University of Southampton, Southampton, UK; [3]Department of Respiratory Medicine, University Hospital Southampton NHS Foundation Trust, Southampton, UK; [4]NIHR CLAHRC Wessex Methodological Hub, University of Southampton, Southampton, UK; [5]Academic Unit of Clinical and Experimental Sciences, Faculty of Medicine, University of Southampton, Southampton, UK*

10.1136/thoraxjnl-2015-207770.127

Background Co-morbidities are common in COPD and have been associated with poorer clinical outcomes. Furthermore, patients with COPD are at an increased risk of developing Community acquired pneumonia (CAP). We investigated the impact of concurrent co-morbidity on the risk of developing CAP, in a cohort of COPD patients identified from the Hampshire Health Record analytical database, a local NHS database containing anonymised primary and secondary care records.

Methods Patients defined as having COPD, had a diagnostic Read code (classification of clinical terms for electronic information coding) in their primary care record at any time prior to 1st January 2010 and were aged ≥40 years at the start of the study period. Using clinician-coded diagnoses, CAP episodes which occurred over a 1-year period from the 1st January 2010 were identified using Read and ICD-10 code lists and were defined as taking up to 70 days to resolve. Listed co-morbidities were based on coded entries at any time prior to 1st January 2010.

Results Included were 6707 patients with a complete history in 2010 and valid data for all variables considered in the analysis. 55% of patients were men and 36% were current smokers, the mean age was 70 years. 189 patients (2.8%) had at least one CAP episode during 2010. Compared to patients without CAP, patients with CAP were more likely to have ischaemic heart disease (IHD p = 0.005), congestive heart failure (CHF p = 0.021), hypertension (p = 0.017), cerebrovascular disease (CVD p < 0.001), dementia (p < 0.001), and bronchiectasis (p = 0.001). Using logistic regression and controlling for potential confounders, CVD and dementia were independent risk factors for CAP (p = 0.009 and 0.007, respectively), while bronchiectasis trended towards significance (p = 0.073) (Table 1).

Abstract S121 Table 1 Co-morbidities associated with CAP occurrence in COPD

Co-morbidity	Odds ratio	95 % confidence interval	P-value
IHD	1.13	0.80 – 1.59	0.478
CHF	1.11	0.65 – 1.89	0.712
Hypertension	1.18	0.87 – 1.60	0.276
CVD	1.73	1.15 – 2.62	**0.009**
Dementia	2.95	1.35 – 6.48	**0.007**
Bronchiectasis	1.70	0.95 – 3.04	0.073

Odds ratios, 95% confidence intervals and p-values were calculated from logistic regression. Separate regression models were used for each co-morbidity, controlling for number of exacerbations in 2010, age, sex, smoking status, inhaled corticosteroid use and MRC dyspnoea score.

Conclusion In this large population database analysis, CVD and dementia were identified as being independently associated with an increased risk of CAP. Oro-pharyngeal dysfunction in CVD and use of sedative medications in dementia, may contribute to these findings. Further analysis of the complete cohort, over the full 5-year observation period will allow the formulation of robust conclusions about the important factors of CAP risk in COPD, including the impact of pharmacotherapy, blood markers and functional parameters.

S122 THE EFFECT OF BODY MASS INDEX ON PATIENT OUTCOME IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A RETROSPECTIVE COHORT STUDY USING THE HAMPSHIRE HEALTH RECORD

C Perry, L Josephs, M Johnson, D Gulliford, M Thomas. *University of Southampton, Southampton, UK*

10.1136/thoraxjnl-2015-207770.128

Introduction and objectives Chronic obstructive pulmonary disease (COPD) is a systemic disease characterised by persistent airflow obstruction but also has significant extra-pulmonary manifestations, including effects on body mass index (BMI). Nutritional status has been implicated as a predictor of outcome. We aimed to investigate the relationship between BMI and outcomes in a representative sample of UK COPD patients.

Method Patients with a coded GP diagnosis of COPD on or before 31/12/2010 and full data for 3 years or until death were identified from the Hampshire Health Record Analytical database, which collects anonymised routine clinical care data from GP and hospital computer records. Subjects were categorised as underweight, normal, overweight, obese or very obese by WHO standards. Outcomes measured were all-cause death and respiratory-cause hospitalisation and emergency department attendance rate in the following 3 years. Multivariate cox regression modelling was used to estimate hazard ratio (HR) and confidence intervals (CI) adjusted for age, gender, smoking status and FEV_1%predicted.

Results 10,813 patients were identified (55% male, mean (SD) age 71.07 (±10.48), FEV_1%predicted 59.96% (±19.98%).

1677 deaths (15.5%) occurred during the follow-up period. Compared with individuals with a normal BMI, underweight subjects had a higher mortality risk in adjusted analysis (HR = 1.58, 95% CI = 1.31–1.88). The lowest mortality rates were in overweight subjects (HR = 0.72, 95% CI = 0.64–0.81) and very obese subjects had no significant difference (HR = 0.83, 95% CI = 0.68–1.02, p = 0.08).

The relationship between hospitalisation rate and BMI was 'U' shaped. Admission rates were highest in the underweight category where 13.3% of subjects had ≥2 admissions compared to 6.2% and 5.3% of overweight and obese subjects respectively.

A similar relationship was observed between BMI and respiratory-cause emergency department attendance. 13.9% of underweight subjects had ≥2 emergency department attendances. The lowest attendance rates were observed in overweight and obese subjects where 6.5% and 5.6% of subjects had ≥2 attendances.

Conclusions Underweight COPD patients have the highest death and hospitalisation rates, whilst being overweight or obese appears to have protective effects. There is potential for nutritional supplementation interventions in underweight COPD patients to improve outcomes, and further research into the protective effects of obesity is required.

S123 CORONARY ATHEROSCLEROSIS DETECTED AT ELECTIVE ANGIOGRAPHY IS MORE SEVERE IN PEOPLE WITH COPD THAN IN THOSE WITHOUT

SV Ruickbie, A Prasad, PW Jones, EH Baker. *St George's University of London, London, UK*

10.1136/thoraxjnl-2015-207770.129

Introduction Coronary artery disease (CAD) affects 16–53% people with chronic obstructive pulmonary disease (COPD) and is the cause of death in ~25% (Smith and Wrobel. Int J COPD. 2014;9:871–888). People with COPD have both high prevalence of cardiovascular risk factors and increased systemic inflammation and oxidative stress that can drive atherosclerosis. We therefore tested the hypothesis that patients with COPD have more extensive coronary artery disease compared to those without.

Methods All patients attending for elective coronary angiography March–July 2015 were invited to take part in a cross-sectional, observational study. Participants who gave consent underwent clinical assessment and spirometry prior to the procedure. COPD was defined as FEV_1/FVC 10 pack-year smoking history. CAD burden was quantified from the angiogram using the Gensini score (Neeland *et al*. Am Heart J 2012;164:547–552). A single rater (Professor of Interventional Cardiology), blinded to clinical diagnosis, determined number and severity of lesions. Blinded repeats were performed and ratings compared to clinical reports to ensure reliability. A nonlinear score was assigned to each lesion based on severity of stenosis and a multiplier applied depending on lesion location in the coronary tree. Lesion scores were summed to derive Gensini score which was log-transformed for analysis.

Results 249 of 294 (85%) people approached took part, 46 (19%) had COPD. The Table 1 compares demographic, respiratory disease-related and cardiovascular risk factors between people with and without COPD. Gensini score was higher in COPD patients (22.5 (8.5–46.0)) than in those without (12.5 (6.0–26.8), p = 0.04), indicating greater burden of coronary atheroma. COPD patients had more circumflex lesions and tended to have more lesions in the right coronary artery and in total than those without.

Abstract S123 Table 1 Comparison of demographic, respiratory disease-related and cardiovascular risk factors between people with and without COPD

	No COPD	COPD	P value
Demographics			
Number	203	46	
Age (years)	66 ± 1	68 ± 1	0.074
Gender (n (%) male)	135 (67%)	37 (80%)	0.065
Body mass index (kg/m^2)	29.8 ± 6.9	27.7 ± 5.2	0.057
Respiratory disease-related factors			
FEV_1 % predicted	84 ± 19	68 ± 2	0.001
Recurrent chest infections (n (%))	19 (9%)	6 (13%)	0.304
High sensitivity CRP (mg/L)	2.1 (0.9–5.4)	4.3 (1.4–7.5)	0.040
Traditional cardiovascular risk factors			
Smoking status (pack years)			
–10	68%	0%	
10–40	26%	59%	
>40	6%	41%	
LDL cholesterol (mmol/l)	2.7+1.0	2.8+1.2	0.429
Systolic blood pressure (mmHg)	135+19	132+20	0.589
Diabetes (n (%))	67 (33%)	8 (17%)	0.025
Coronary artery disease burden			
Gensini score	12.5 (6.0–26.8)	22.5 (8.5–46.0)	0.040
Number of vessels affected	2.2 ± 1.0	2.4 ± 1.0	0.125
Total number of lesions	4.3 ± 2.6	5.2 ± 2.7	0.065
- Left coronary artery lesions	2.0 ± 1.2	2.1 ± 1.3	0.385
- Circumflex lesions	1.0 ± 0.8	1.3 ± 1.0	0.028
- Right coronary artery lesions	1.4 ± 1.2	1.7 ± 1.1	0.071

FEV_1, forced expiratory volume in 1 s; mMRC, *modified Medical Research Council* dyspnoea scale; CAT, COPD assessment test. Values are mean ± standard deviation, compared with independent t tests, median (interquartile range), compared with Mann-Whitney U tests, or number (%), compared with chi squared tests.

Conclusions People with COPD have more severe coronary artery disease than those without. This analysis cannot determine whether this was due to the presence of COPD or the fact that patients with CAD and COPD had much greater cigarette smoke exposure than CAD patients without COPD.

S124 THE BODE INDEX IS AN INDEPENDENT DETERMINANT OF ARTERIAL STIFFNESS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

[1]M Fisk, [2]NS Gale, [3]D Mohan, [1]CM McEniery, [1]JR Forman, [4]CE Bolton, [5]W MacNee, [2]JR Cockcroft, [1]J Fuld, [6]PMA Calverley, [1]J Cheriyan, [7]R Tal-Singer, [3]MI Polkey, [1]IB Wilkinson. *[1]University of Cambridge & Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK; [2]Cardiff University, Cardiff, UK; [3]Royal Brompton & Harefield NHS Foundation Trust, London, UK; [4]University of Nottingham, Nottingham, UK; [5]Edinburgh University, Edinburgh, UK; [6]University of Liverpool, Liverpool, UK; [7]GSK, Pennsylvania, USA*

10.1136/thoraxjnl-2015-207770.130

Introduction COPD is associated with increased cardiovascular events, independent of established risk factors. Arterial stiffness and carotid intima-media thickness (CIMT) are surrogates of cardiovascular risk and we sought to determine their relationship with COPD severity and prognosis in the ERICA (Evaluation of role of inflammation in airways disease) multi-site UK study: the