P89 AMBULATORY OXYGEN ASSESSMENTS IN COPD AND PULMONARY FIBROSIS

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Background Between 2006 and 2011, 161 patients were referred for formal ambulatory oxygen assessment at the Newcastle RVI. Their results have been reviewed.

Method The assessments comprised three 6-min walk tests (6MWT) supervised by a trained healthcare professional as per BTS guidelines (2006).

Test 1: On room air (RA)

Test 2: On room air with the oxygen supply switched off

Test 3: On oxygen 4 l/min via nasal cannulae

Minimum SpO_2 during exercise, distance walked and oxygen flow rate required to maintain SpO_2 above 90% were recorded together with the respiratory diagnosis and basic demographic details.

Results 18 patients were excluded as they did not de saturate on walk 1 or were unable to complete the 6MWT. 143 patients' results were analysed. 82 were male with 61 female. The two commonest clinical diagnoses were Interstitial Pulmonary Fibrosis (IPF) and COPD.

IPF patients walked on average 70 m (31%) further than COPD patients on room air. They had the greatest increase in oxygen saturation when exercising on supplemental oxygen (12%) but had the lowest improvement in walking distance (7.3%). There was no relationship between improvement in walk test distance and improvement in oxygenation in any of the subgroups.

Conclusion Further studies may be needed to explore the relative benefits of ambulatory oxygen in non-COPD patients.

P90 CYCLIN-DEPENDENT KINASES 7 AND 9 SPECIFICALLY REGULATE NEUTROPHIL TRANSCRIPTION AND THEIR INHIBITION DRIVES APOPTOSIS TO PROMOTE RESOLUTION OF INFLAMMATION

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Introduction and Objectives Terminally-differentiated neutrophils are short-lived but key effector cells of the innate immune response and play a prominent role in the pathogenesis and propagation of many inflammatory diseases including interstitial lung disease. BAL neutrophilia has been correlated with poor outcome in idiopathic pulmonary fibrosis (IPF) and neutrophils are the dominant cell type in acute exacerbations of IPF as well as in diffuse alveolar damage. Non-specific cyclin-dependent kinase inhibitor drugs have previously been shown to resolve neutrophil-dominant inflammation in the murine bleomycin lung injury model an established model of IPF. Here we elucidate the mechanism by which CDK inhibitor drugs mediate neutrophil apoptosis and hence promote resolution of inflammation.

Methods We isolated peripheral blood neutrophils from healthy human donors and performed a variety of experiments including microarray, confocal microscopy and apoptosis assays (flow cytometry, fluorometric assay, DNA ladders and mitochondrial integrity assay and western blotting) to show that specific effects on neutrophil transcriptional capacity are responsible for CDK-inhibitor driven neutrophil apoptosis. Finally we show that specific CDK inhibitors drive resolution of neutrophil-dominant inflammation in the murine bleomycin lung injury model (Histology, BAL analysis).

Results CDK inhibitors drive neutrophil apoptosis. Neutrophil apoptosis is dependent on a critical balance of pro- and anti-apoptotic proteins. Functional transcriptional machinery is present in human peripheral blood neutrophils. CDKs are present in neutrophils and their activity is both demonstrated and modulated with the use of specific CDK inhibitors. Specific CDK inhibition is a successful strategy for the resolution of murine bleomycin lung injury.

Conclusion We highlight a novel mechanism that controls both neutrophil transcription and apoptosis that could be targeted by selective CDK inhibitor drugs to resolve established neutrophil-dominant inflammation.

P91 ARE CASES OF GRANULOMATOUS COMMON VARIABLE IMMUNODEFICIENCY MISDIAGNOSED AS SARCOIDOSIS IN ROUTINE CLINICAL PRACTICE?

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Introduction Common variable immunodeficiency (CVID) is a primary immune disorder characterised by impaired B cell differentiation and hypogammaglobulinaemia. It predisposes to encapsulated bacterial infections, commonly affecting the respiratory tract. 8%–20% of CVID patients have a granulomatous form. Granulomatous CVID may share clinical features with sarcoidosis, namely persistent cough, breathlessness, fatigue, fever, and arthralgia. Non caseating granulomata in lymph node biopsies and elevated angiotensin converting enzyme levels occur in both conditions. Differentiation between the two conditions is essential to allow management with immunoglobulin replacement and avoidance of excessive corticosteroids.

Method Patients with a diagnosis of "sarcoidosis" recorded in chest clinic letters between April 2009 and September 2010 were identified. Clinic letters, blood tests, histology and imaging were reviewed.

Results 175 patients with a diagnosis of sarcoidosis were identified. 80% had lymphadenopathy and 62% pulmonary involvement. Dermatological, ocular, rheumatological and other involvement was found in 19%, 17%, 16% and 9% respectively. 24% had potential features of CVID, such as recurrent chest infections, sinusitis, bronchiectasis or inflammatory bowel disease. Total globulin had been measured in 172/175 (98%) patients. 45/172 (26%) had elevated total globulin; 3/172 (2%)had low total globulin levels. Immunoglobulins had been measured in 106/175 (61%). Immunoglobulins had been measured in: 20/28 (71%) of those with recurrent sinusitis or lower respiratory tract infections; 20/25 (80%) of those with bronchiectasis; and8/8 (100%) of those with both recurrent chest infections and bronchiectasis. Four patients had persistently low IgM, two had persistently low IgA and one had persistently low IgG. No single

Abstract P89 table 1

Diagnosis	Number of patients	Average pre test SpO_2	Average lowest SpO_2 on RA	Average lowest SpO_2 on O2 4 l	Walk 1 (m)	Walk 2 (m)	Walk 3 (m)	% Increase in SpO_2 on oxygen	% Increase in walk distance on oxygen
All Patients	143	91	77	87	242	251	273	11.8	8.7
COPD	61	91	79	88	213	228	252	12.1	10.6
IPF	23	93	76	85	298	299	320	12.2	7.3

patient had polyclonal hypogammaglobulinaemia, but levels were not measured in 11/42 (26%) with potential features of CVID.

Conclusion Our study identified a cohort of patients with a diagnosis of sarcoidosis and features associated with CVID. We found that immunoglobulins were not being routinely measured during the work-up of patients with sarcoidosis as recommended by the Map of Medicine. Recent review of 28 local CVID patients identified two who were initially misdiagnosed with sarcoidosis. In one case this misdiagnosis persisted for 8 years. Granulomatous CVID is uncommon, but respiratory physicians should ensure that their routine work-up for sarcoidosis excludes this treatable condition.

P92 C REACTIVE PROTEIN AS A PREDICTIVE INDICATOR OF TREATMENT AND DISEASE PROGRESSION IN PATIENTS WITH SARCOIDOSIS: A RETROSPECTIVE OBSERVATIONAL COHORT STUDY IN THE WEST OF IRELAND

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Introduction C reactive protein (CRP) is an acute-phase protein synthesised in response to tissue damage or inflammation. Previous studies evaluating the role of CRP in sarcoidosis have focussed on disease monitoring. Adequate markers to determine predictors of progression in sarcoidosis are currently lacking.

Objectives The aim of this retrospective observational study is to evaluate the utility and practical application of baseline serum CRP in predicting treatment indication and disease severity in a well-defined sarcoidosis population over a 26-year follow-up period.

Methods We reviewed the clinical, biochemical, radiological and physiological findings in all confirmed sarcoidosis patients attending a regional referral centre between 1983 and 2009. Disease progression was defined in two ways: decline in lung function as per Hunninghake criteria (>15% reduction in baseline FEV_1 % and/or >10% decline in baseline DLCO%); and radiological progression (defined as worsening stage of disease and/or development of bronchiectasis or cavitation). Indication for treatment was defined as need for corticosteroid treatment throughout duration of follow-up. Correlation coefficients and multiple logistic regression (MLR) analysis were performed to determine independent baseline variables relating to outcome. Results are expressed as OR, 95%-CIs and p-values.

Results 328/409 (80.2%) of sarcoidosis patients were suitable for inclusion, 46.6% of whom had an abnormally elevated CRP at presentation. MLR analysis of presenting characteristics with baseline CRP showed strong associations with Löfgren's syndrome (p=0.002) and FVC % (p=0.009), consistent with previously published data. In terms of predicting outcomes, CRP was found to be an independent predictor of both radiological progression and physiological deterioration (p=0.026 and 0.048 respectively). Other independent indices for radiological progression were smoking status, Löfgren's syndrome and Scadding CXR stage at presentation (p=0.035, 0.002 and <0.001 respectively). DLCO % was shown to be a further independent predictor of physiological decline (p=0.015).

Conclusion This is one of the largest clinical studies investigating the predictive influence of CRP in sarcoidosis. The data suggests a role for CRP as a predictive indicator of physiological deterioration and radiological progression. Therefore, a subset of chronic sarcoidosis patients with high baseline CRP at presentation may benefit from closer monitoring and extra attention to parameters of physiological and radiological decline.

Integrated respiratory care

P93 HOSPITAL ADMISSION AVOIDANCE FOR PEOPLE WITH EXACERBATIONS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) THROUGH COLLABORATIVE WORKING BETWEEN SUFFOLK COPD SERVICES AND EAST OF ENGLAND AMBULANCE SERVICE

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Introduction BTS Guidelines recommend that admission avoidance schemes should be available for patients with exacerbations of COPD. The Suffolk COPD Service was established in 2009, operating 365 days/year. One strand of the service aims to avoid inappropriate hospital admission by encouraging GPs to refer to the service rather than sending patients into hospital. However, despite wide publicity hospital admission rates remained high. Review of 24 COPD hospital admissions suggested that 50% would have been suitable for admission avoidance through Suffolk COPD Services. 95% of these patients had been brought in to A&E by ambulance. Feasibility of direct ambulance referral into Suffolk COPD Services was discussed with ambulance personnel.

Method A business case, working protocol and pathway were developed jointly, along with a robust clinical governance system. It was planned that a member of the Suffolk COPD Nursing team would visit the patient within 4 h of referral. Approval was gained from the Local Medical Council and Expert Clinical Steering Group. The system was launched following wide publicity and training of both ambulance and nursing staff.

Results The first successful referral was received 40 min after the launch. In the first year 83 referrals were received, of which only eight were inappropriate and requiring redirection to other services or hospital admission.

Advantages of ambulance referral system:

- Reduction in ambulance call cycle time by up to 30 min
- Increased ambulance personnel COPD knowledge
- Development of patient group directives
- Improved team working/collaboration across services
- Ability to discharge duty of care to a specialist community service
- Increased admission avoidance
- People cared for in own home
- "Self supported" care encouraged
- Cost efficient

Conclusion 73% were admissions avoided compared to the 50% which had been predicted. The collaboration was a successful model of service delivery, reducing hospital admissions by the seamless transition of the duty of care from the ambulance service to the Suffolk COPD Services, who supported the patient at home.

Abstract P93 Table 1 Period from July 2010 to June 2011

Total referrals	Appropriate referrals	Admitted at nurse 1st visit	Admitted within 2/52	Total admissions
83	75 (90%)	10 (13%)	10	20 (27%)

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