P66 SARCOPENIA IN COPD: PREVALENCE, CLINICAL CORRELATES AND RESPONSE TO PULMONARY REHABILITATION

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Background Sarcopenia is age-related loss of skeletal muscle mass leading to increased risk of physical disability, poor health status and death. Although sarcopenia is primarily an age-related condition, it is recognised that there are multiple contributing factors, notably from immobility and the effects of chronic disease. International consensus working groups have defined sarcopenia as a loss of muscle mass and reduced muscle strength or function. Although skeletal muscle dysfunction is well recognised in chronic obstructive pulmonary disease (COPD), the prevalence of sarcopenia (defined using international consensus guidelines) and the impact of sarcopenia upon functional capacity and health related quality of life (HRQoL) have not been previously described in patients with COPD. Furthermore, it is not known whether sarcopenia affects the response to pulmonary rehabilitation (PR).
Methods Sarcopenia was determined using the European Working Group on Sarcopenia in Older People (EWGSOP) algorithm in 622 outpatients with stable COPD. Other measurements included incremental shuttle walk (ISW), five-repetition sit-to-stand (5STS), quadriceps maximum voluntary contraction (QMVC) and HRQoL (St George's Respiratory Disease (SGRQ) and COPD Assessment Test (CAT)). Response to PR was determined in 43 patients with sarcopenia and compared with a control group identified using propensity score matching. Baseline characteristics and change pre- to post-PR were compared between groups.
Results Prevalence of sarcopenia was 14.5% (16.1% men and 12.3% women; p = 0.20), which increased with advancing quartiles of age and GOLD spirometric stage. Patients with sarcopenia were older, had worse air flow obstruction, reduced QMVC, exercise capacity and HRQoL (Table 1). Both sarcopenic patients and controls showed significant improvements in exercise capacity, functional performance, QMVC and HRQoL with PR, with no between group differences. Following PR, 12/43 (28%) patients no longer met EWGSOP criteria for sarcopenia.

Abstract P66 Table 1 Baseline clinical characteristics of sarcopenic and non-sarcopenic COPD patients expressed as mean (SD) and median (25th and 75th centiles)

	Non-sarcopenic (n = 532)	Sarcopenic (n = 90)	p-value
Age (years)	70 (10)	73 (8)	**0.003**
Sex (M:F)	297:235	57:33	0.112
MRC	3 (1)	4 (1)	**0.028**
FEV1% predicted	44.00 (30.00, 59.00)	37.00 (26.75, 50.00)	**0.003**
Weight (kg)	78.48 (19.47)	58.58 (13.69)	<**0.0001**
BMI (kg/m^2)	28.62 (6.13)	21.43 (3.99)	<**0.0001**
CAT	21 (8)	24 (9)	**0.001**
SGRQ Total	52.09 (17.02)	57.11 (17.47)	**0.011**
ISW (m)	222 (148)	157 (118)	<**0.0001**
4MGS (m/s)	0.90 (0.24)	0.77 (0.22)	<**0.0001**
5STS (secs)	14.05 (11.42, 18.96)	19.55 (12.92, 60)	<**0.0001**
Handgrip (kg)	27.61 (10.04)	21.46 (7.26)	<**0.0001**
Peak QMVC (kg)	24.99 (9.37)	18.26 (6.94)	<**0.0001**

Conclusion There is a high prevalence of sarcopenia in patients with COPD which is associated with reduced exercise capacity and HRQoL. Sarcopenia does not impact upon response to pulmonary rehabilitation in COPD.

P67 LARYNGEAL NARROWING IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD): A MECHANISM FOR GENERATING INTRINSIC PEEP?

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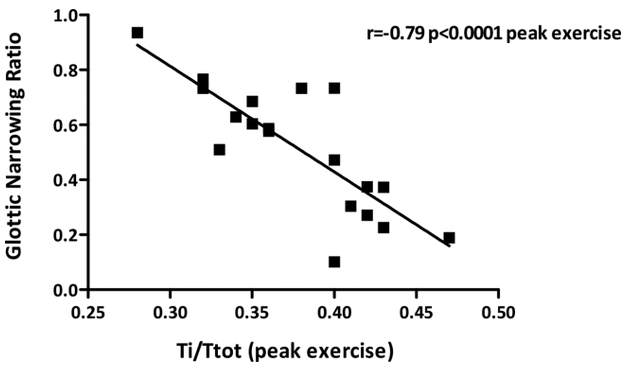
Introduction and rationale Patients with COPD often exhibit pursed lip breathing during exercise, a strategy to help overcome a rise in intrinsic PEEP secondary to dynamic hyperinflation. A similar role for laryngeal closure to optimise respiratory mechanics during exertion is postulated.
Objectives Assessment of laryngeal narrowing and its role in exercise intolerance and dynamic hyperinflation in COPD.
Methods and Measurements: We studied 30 age and sex matched subjects (n = 11 healthy, n = 8 mild to moderate COPD, n = 11 severe COPD). Baseline physiological characteristics and clinical status were assessed prior to an incremental maximal cardiopulmonary exercise test with continuous laryngoscopy. Laryngeal narrowing was calculated at the glottic and supra-glottic aperture at rest and peak exercise.
Results Expiratory laryngeal narrowing was pronounced in patients with COPD at rest and peak exercise and related to FEV_1 (r=-0.53, $p < 0.05$ and r=-0.70, $p < 0.001$ respectively). Glottic narrowing at peak exercise correlated with inspiratory duty cycle time (Ti/Ttot) (Figure), this was not seen at rest (r=-0.79, $P < 0.0001$ and r=-0.07, p = 0.77 respectively). Laryngeal closure at peak exercise inversely correlated with peak oxygen uptake (r=-0.68, $p < 0.01$).
Conclusion Dynamic laryngeal closure during expiration is prevalent in patients with COPD and is related to disease severity, respiratory duty cycle and exercise capacity.



Abstract P67 Figure 1

P68 TIME-COURSE OF HUMAN RHINOVIRUS INFECTION AND UPPER RESPIRATORY TRACT SYMPTOMS DURING COPD EXACERBATIONS

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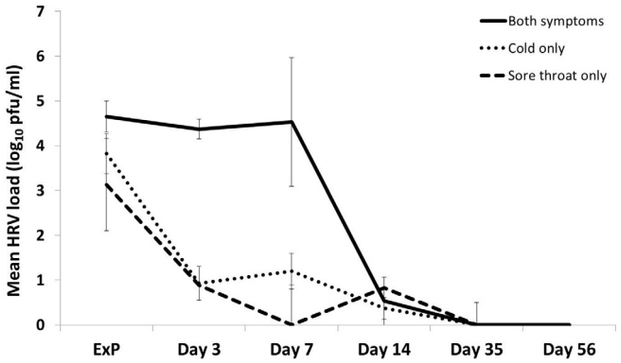

Abstract P68 Figure 1 HRV load during the time-course of an exacerbation and recovery period in sputum samples (n = 106) associated with both cold symptoms and a sore throat (n = 23), cold symptoms only (n = 67) or a sore throat only (n = 16). Data shown as mean (±SEM)

Introduction Human rhinoviruses (HRV) are the main aetiological agents of virus-associated COPD exacerbations (Seemungal *et al*. AJRCCM 2001). The relationship between upper respiratory tract symptoms and HRV load at exacerbation presentation (ExP) and during recovery has not been described in naturally-occurring exacerbations. We quantified changes in airway HRV load at ExP and during the recovery period, in patients reporting symptoms of a cold, sore throat, or both.

Methods Patients in the London COPD cohort recorded new or increased respiratory symptoms on daily diary cards. Exacerbations were defined as an increase in respiratory symptoms for two consecutive days, with at least one symptom being major (dyspnoea, sputum purulence or volume) and the other a major or minor (wheeze, cold, sore throat, cough). Reverse-transcription quantitative PCR was used to detect and quantify HRV in 106 sputum samples collected at ExP (n = 38) and days 3 (n = 16), 7 (n = 27), 14 (n = 16), 35 (n = 6) and 56 (n = 3) following.

Results HRV load decreased significantly from ExP to Day 3 in samples associated with either cold symptoms ($p < 0.001$) or sore throat ($p = 0.049$) but not in those associated with both symptoms (Figure 1). At Day 3 the HRV load in samples with both symptoms (n = 5) was significantly higher than in those with cold symptoms only (n = 9) ($10^{4.22(3.94–4.88)}$ vs $10^{0.55(0–1.98)}$ pfu/ml; $p = 0.002$) but not for those with a sore throat only (n = 2) ($10^{0.89(0–0.89)}$ pfu/ml; $p = 0.095$). At Day 7, the median (IQR) HRV load in samples with both symptoms (n = 4) ($10^{4.48(1.85–7.28)}$ pfu/ml) was significantly higher than in those with cold symptoms only (n = 19) ($10^{0(0–2.74)}$ pfu/ml; $p = 0.018$) or a sore throat only (n = 4) ($10^{0(0–0)}$ pfu/ml; $p = 0.029$). There was no significant difference at subsequent time-points.

Conclusion Patients reporting both cold symptoms and a sore throat as part of a COPD exacerbation had higher HRV loads than those with just one symptom until after Day 7 post-exacerbation. In patients with both symptoms, the HRV load remained higher for a longer period of time than in patients with only one symptom, which may suggest longer recovery times for more symptomatic patients. These results may inform the timing of administration of antiviral therapies at COPD exacerbation.

Improving lung cancer outcomes

P69 A STUDY OF THE EFFECT OF THE 2013 'BE CLEAR ON LUNG CANCER' CAMPAIGN ON 2 WEEK WAIT REFERRALS TO AN INNER NORTH WEST LONDON CANCER CENTRE

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Introduction The first national 'Be Clear on Cancer' lung cancer campaign ran for 6 weeks from May 2012 with the message 'Been coughing for 3 weeks? Tell your doctor'. During this time there was a 32% increase in 2 week wait (2 WW) referrals, with approximately 700 additional cancers diagnosed compared to 2011.

Method We studied the effect of the 6 week campaign in 2013 on 2 WW referrals to Imperial College NHS trust, comparing with referrals in the 6 week period prior to the campaign. We assessed quality of the referral based on completeness of the 2 WW proforma (scored out of 10), and the outcome of the referral. Direct radiology referrals were not included.

Results The campaign period was 2nd July to mid-August 2013. We studied from 15th May until 15th August 2013. Our referrals increased by 52% during the campaign (25 vs 38). The referral quality was unchanged (average score 6.24 pre-campaign and 6.65 during the campaign, $p = 0.41$). The proforma was used in 20/25 referrals pre-campaign and 30/38 during the campaign. Table 1 shows the results of the patient information section. Patients received less information during the campaign (p=ns).

Diagnoses There were more referrals diagnosed with lung cancer pre-campaign than during it (37.5% vs 13.9% $p = 0.055$). One patient in the campaign group was diagnosed with lymphoma. The pre-campaign group had normal investigations in 16.7% patients, with other diagnoses made in 45.8% compared to the campaign group which had 22.2% ($p = 0.6$) and 61.1% ($p = 0.25$) respectively.

There was no significant increase in referrals with a cough as the only symptom (7/25 vs 11/38 $p = 0.95$).

In the campaign group, in patients diagnosed with lung cancer, we found a significant improvement in referral score compared to those without cancer (8 vs 4.87, $p = 0.01$). There was no change in the pre-campaign group.

Conclusion Our 2 WW referrals increased during the campaign but fewer patients were diagnosed with lung cancer and more received a non-cancer diagnosis. During the campaign, referral forms for those without cancer were poorly completed which may represent pressure on GPs to refer coughs through the 2 WW pathway despite low suspicion.

Abstract P69 Table 1 Patient Information

	6 weeks pre-campaign	6 weeks of campaign	P value
No. patients told that cancer was being investigated	6/20 (30%)	13/30 (20%)	0.34
No. patients given 2WW information leaflet (if on form)	4/17 (23.5%)	6/24 (16.7%)	0.61
No. patients told they'd be seen in 2 weeks	12/20 (60%)	19/30 (40%)	0.82