

Abstract P108 Figure 1

Introduction and Objectives Non-CF bronchiectasis is a major cause of morbidity in the UK. 60%–80% of adults with newly diagnosed bronchiectasis have had CPC since childhood. Studies show this condition can be prevented by interventions in childhood designed to improve airway clearance and elimination of bacteria. Children with CPC/non-CF bronchiectasis are often assessed in general paediatric clinics with no physiotherapy input. A study highlighted that patients attending specialist bronchiectasis clinics are more likely to be managed according to BTS quality standards. We setup a multidisciplinary clinic with standardised care for children with chronic productive cough.

Methods We introduced a one-stop multidisciplinary (CPC) clinic, lead by a designated respiratory consultant, respiratory physiotherapist and physiologist. CPC clinic runs on a monthly basis but patients can be seen between appointments if required in the physiotherapy department. We performed targeted clinical assessment using formal clinical assessment proforma, improved airway clearance techniques by regular assessment with respiratory physiotherapist and lung function by physiologist, engaged with patient and parents by providing information leaflets and involving them in formulating an individualised action plan.

Results 22 patients are assessed in CPC clinic with 90% attendance. 15 patients have established bronchiectasis among which 6 children have a diagnosis of primary ciliary dyskinesia, 7 children have CPC. All patients attending the clinic were seen by respiratory physician, chest physiotherapist and physiologist. 91% had clinical proforma sheet completed, 100% had airway clearance assessment by physiotherapist with sputum microbiology sent in 90%. 100% of children ≥ 5 years age had lung function performed and individualised action plan given.

Conclusions Since setting up the clinic, children with CPC are getting targeted care by a multidisciplinary team. The clinic is being extended to include children with immunodeficiency under joint care with a clinical immunologist. There will be a focussed annual review with involvement of a dietician, ENT, radiology and microbiology. Feedback from users is very positive and in the short term QoL for families has improved. However it will require long term follow-up to determine if the prognosis has also improved.

P109 UTILITY OF A MULTIDIMENSIONAL UPPER AIRWAY VISUAL ANALOGUE SCALE TO CHARACTERISE LARYNGEAL DYSFUNCTION

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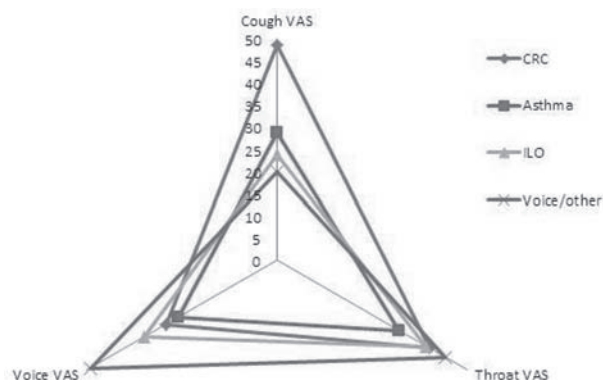
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Introduction Laryngeal hypersensitivity is now recognised as underpinning many features of laryngeal dysfunction, such as chronic refractory cough (CRC), inducible laryngeal obstruction (ILO) and globus sensation (Hull et al., 2016). Many respiratory patients present with overlapping upper airway symptoms, yet current subjective rating scales have focused narrowly on single clinical features and potentially failed to capture the importance of this overlap. The aim of this work was to assess overlapping laryngeal features in patients in an upper airway service, using a multidimensional upper airway visual analogue scale (VAS).

Methodology Patients with CRC, asthma, ILO and voice difficulties were referred from the RBH specialist cough and upper airway clinic to speech and language therapy (SLT). They rated cough severity, throat discomfort and voice change on the multidimensional upper airway VAS at their initial assessment. Mean VAS scores were calculated for each diagnostic group.

Results Data from 122 patients (91 females, 75%; 31 males, 25%) aged between 18 and 82 years ($M=52.4$, $SD=15.8$) were collected over a six month period. Sixty-nine patients were referred with CRC (56.5%), 16 (13.1%) with asthma, 32 (26.2%) with ILO and 5 (4.1%) with voice changes. There was an interaction between diagnosis and all three ratings combined ($p < 0.05$) and between all pairs of ratings for each diagnosis ($p < 0.05$), apart from cough severity and voice change in patients with ILO (figure 1).

Conclusion The multidimensional upper airway VAS captures the overlap between upper airway symptoms and highlights the importance of comprehensive assessment to ensure all features of laryngeal dysfunction are treated effectively. The multidimensional VAS will be further developed to include ratings of breathlessness and swallow function and used to evaluate response to treatment.



Abstract P109 Figure 1 Mean VAS ratings of cough severity, throat discomfort and voice change according to diagnosis.

P110 FEASIBILITY OF CONTINUOUS LARYNGOSCOPY DURING PROVOCATION IN THE ASSESSMENT OF INDUCIBLE LARYNGEAL OBSTRUCTION

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Introduction Inducible laryngeal obstruction (ILO) is typically provoked by a range of stimuli, including perfumes and exercise, and characterised by transient throat tightness, dyspnoea and stridor. Central to the diagnosis of ILO is paradoxical adduction of laryngeal structures on inspiration. Continuous laryngoscopy during exercise (CLE) is now established as the gold-standard diagnostic test for exercise-ILO, but diagnosis of other forms of ILO is currently dependent on non-continuous laryngeal visualisation, where crucial diagnostic behaviour of the larynx may be missed. We report the first application of continuous laryngoscopy during provocation (CLP).

Methodology Fifteen female patients (aged 36–58) suspected of having ILO and referred from the RBH specialist upper airway clinic underwent CLP, using self-selected provocation agents to elicit their typical symptoms. Three patients had a prior confirmed diagnosis of asthma. The flexible nasendoscope (CMOS, Karl Storz) was passed without anaesthetic and secured on specialist headgear (figure 1). Patients entered a sealed provocation booth, where they were exposed to the agents they had selected, unable to see the monitor. On elicitation of upper airway symptoms, the specialist SLT initiated laryngeal control strategies with visual biofeedback. The test ended when the patient's typical symptoms had been generated or when exposure exceeded the point of previous symptom provocation.

Results All patients tolerated continuous placement of the scope and confirmed that exposure in the chamber had been sufficiently concentrated to provoke typical symptoms. Only one patient exhibited classical paradoxical glottic movement. Pre-exposure, the vocal cords were closely adducted in three (20%) patients and fully adducted during unintentional breath-holding in three patients (20%). All patients subsequently attended a review with the specialist SLT to consolidate understanding of CLP findings and use of control strategies.

Conclusion CLP is a safe and well-tolerated method for evaluating laryngeal movement during provocation and negates repeated passage of the nasendoscope. Continuous monitoring

throughout provocation testing improves diagnostic accuracy by capturing the presence or absence of paradoxical movement and may be linked with software that tracks laryngeal movement digitally. Further work is needed to develop standardised CLP protocols and identify clinical phenotypes of ILO.



Abstract P110 Figure 1 Demonstration by first author of nasendoscope placement for CLP.

Infected lung: from bench to bedside

P111 EXHALED BREATH BIOMARKERS IN PULMONARY ASPERGILLOSIS

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Introduction Pulmonary aspergillosis has a substantial global health burden, and is difficult to diagnose and treat. *Aspergillus* metabolism Results in measurable changes in volatile organic compounds (VOCs) and these may be detectable in the breath. In this pilot study, we sought to measure the abundance of VOCs in the breath samples of patients with pulmonary aspergillosis, and identify any difference in VOC profile between patients with and without *Aspergillus* in their airway.

Methods Patients were recruited while attending the National Aspergillosis Centre and University Hospital South Manchester, and categorised as *Aspergillus* positive or *Aspergillus* negative on the basis of high volume sputum culture. Lower airway breath samples were collected from patients and analysed by thermal desorption gas chromatography mass spectrometry (TD-GC-MS). A target library based upon previous literature reports of *Aspergillus*-related VOCs was used to deconvolve the raw GC-MS data. Peak area on the chromatogram for each sample was calculated as a measure of VOC abundance. Potentially discriminating compounds between the groups were identified by univariate analysis.

Results 18 patients were recruited, and were allocated to the following groups: culture-positive (n=7), and culture-negative