group the mean OCS dose is equivalent to 11.5 mg (±7.6) of prednisolone. The mean of the highest historical eosinophil level was 700 cells/ microlitre (±360).

Conclusions The following barriers to mepolizumab therapy have been identified:

- Poor adherence to ICS therapy in patients believed to be on optimal therapy.
- Long-term OCS treatment is suppressing the eosinophil count below 300 cells/microlitre

Firstly, this highlight the need for service improvement to ensure that adherence is regularly monitored. Those who are non-adherent can be referred to the RASP study or for inhaled nitric oxide (FeNO) monitoring. Secondly, patients on long-term OCS may be prevented from benefiting from the steroid sparing effects of mepolizumab. To achieve the necessary eosinophil counts steroids must be progressively reduced risking destabilisation of asthma control.

REFERENCE

1. National Institute for Health and Clinical Excellence. Mepolizumab for treating severe refractory eosinophilic asthma. *Nice Technology Appraisal Guidance* 2017;431.

P19 IMPACT OF MONTH OF INITIATION OF OMALIZUMAB ON TREATMENT OF SEVERE ALLERGIC ASTHMA, A SUB-ANALYSIS OF THE APEX II STUDY

[1]R Niven, [2]D Saralaya, [3]R Chaudhuri, [4]M Masoli, [5]I Clifton, [6]AH Mansur, [7]S Hollywood, [8]S McLain-Smith, [1]A Menzies-Gow. *[1]University Hospital of South Manchester, Manchester, UK; [2]Bradford Teaching Hospitals NHS, Bradford, UK; [3]Gartnavel General Hospital, Glasgow, UK; [4]Plymouth Hospitals NHS Trust, Plymouth, UK; [5]St James's University Hospital, Leeds, UK; [6]Birmingham Heartlands Hospital, Birmingham, UK; [7]Novartis Pharmaceuticals UK Ltd, Frimley, UK; [8]P H Associates Ltd, Marlow, UK*

10.1136/thoraxjnl-2017-210983.161

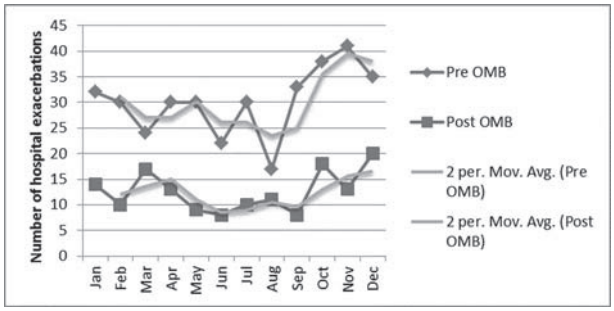
Introduction and Objectives In asthma, seasonal variation in outcomes is known with seasonal peaks in exacerbation. Allergic inflammation is associated with greater susceptibility to viral infections. The UK real world studies, APEX I and II, demonstrated omalizumab reduced exacerbation frequency, healthcare utilisation, OCS burden and improved lung function in severe allergic asthma patients, but initial analyses excluded an assessment of seasonal impact. Patients initiated during their usual symptom season, may have inadequate time to suppress basophils and mast cells prior to exacerbating and consequently fail their 16 week treatment assessment assessing response. The objective was to determine if season/month of initiation had any impact on response (16 week clincial assessment according to usual clinical practice at each centre), hospital (A and E attendance and/or admission) and 'dose exacerbation', (OCS dose increase ≥10 mg for ≥3 days) rates.

Methods The APEX II data was reanalysed, directly comparing response rate and frequency of exacerbations with time of initiation. We also looked at the pattern of seasonal exacerbations pre- and post- omalizumab initiation.

Results In the 258 cases included, response rate at 16 weeks where response was known was 82.4%. Highest response rates were in those initiated on treatment in December (90%) and July (89%) and lowest were January (62%) and August (69%). The total number of 'hospital exacerbations', over the 12 month period pre- and post-initiation was reduced from 362 to 151. Pre-initiation, there was a seasonal peak of hospital exacerbations (figure 1) from August to October. This was suppressed by omalizumab, with greatest reduction observed in September (76%) and lowest in March (29%). The total number of 'dose exacerbations', over the 12 month period pre- and post-initiation was reduced from 948 to 522. The seasonal pattern was different than for hospital admissions, with a relatively consistent reduction of dose exacerbations across the year. The season/month of initiation was not statistically different for response, hospital and dose exacerbation rates.

Conclusions Regardless of the timing of initiation, the response rate to omalizumab is consistent through the year, the biggest observable seasonal effect, was the diminishing of the seasonal peak of hospital exacerbations around early autumn.

Please refer to page A257 for declarations of interest in relation to abstract P19.



Abstract P19 Figure 1 Impact of omalizumab on hospital exacerbations. 2 point moving average is the average of the previous data point and the current data point.

P20 LATENT HELMINTH DISEASE AS A CAUSE OF EOSINOPHILIA IN RESPIRATORY PATIENTS

[1]AM Singer, [2]J Barrett, [1]FR Ali, [2]J Lambourne, [1]PE Pfeffer. *[1]North Central and East London Severe Asthma Service, St Bartholomew's Hospital, Barts Health NHS Trust, London, UK; [2]Department of Microbiology, Barts Health NHS Trust, London, UK*

10.1136/thoraxjnl-2017-210983.162

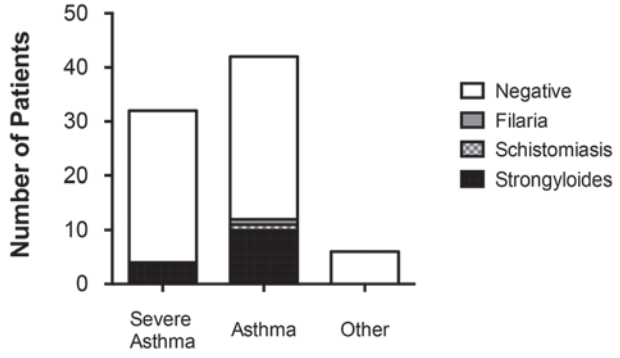
Introduction Within the UK, eosinophilia is most commonly associated with allergy and respiratory diseases such as asthma. Increasingly raised blood eosinophil counts are seen as a biomarker of heightened Th2 inflammation indicating a need to prescribe steroids in airways diseases. New treatments for severe Th2-high asthma aim to inhibit the eosinophilic pathway to reduce pathological inflammation. However by inhibiting this pathway we risk suppressing the body's natural defences against parasitic helminth disease – in patients with asymptomatic latent *Strongyloides stercoralis* there is the risk of catastrophic hyper-infection. Our particular patient cohort in East London is a diverse international community who travel frequently. We therefore sought to evaluate the prevalence of asymptomatic helminth disease in respiratory, and particularly asthma patients, within our Trust, which includes a severe asthma service where we prescribe biologics that inhibit the Th2 pathway.

Methods We prospectively tested eosinophilic patients reviewed in respiratory clinic for helminth infection using serological screening as part of a Service Evaluation. Inclusion criteria were an eosinophilia (≥0.3) or those being considered for

treatment with Mepoluzimab. Patients were tested for strongyloidiasis, filariasis and schistosomiasis depending on travel history. Patients symptomatic of helminth infection (e.g., diarrhoea) were excluded from this evaluation.

Results We tested 80 patients, 32 from severe asthma clinic, 42 from the general asthma clinic and 6 from other clinics. From these 16 (20%) had positive parasite serology: 14 of these were for *Strongyloides stercoralis* and 1 each for filarial and schistosomal. All the positives had asthma and 4 were from the severe asthma service. The average IgE was 433 and the average eosinophil count was 0.7. There was no statistical difference between the eosinophil counts, or total IgEs, between the positive and negative groups.

Conclusion There is a high prevalence of asymptomatic parasitic infection within our cohort, suggesting local patients who have an eosinophilia should be screened for helminth disease even in the presence of another cause eosinophilia. Furthermore, we recommend all patients being assessed for a biologic that would inhibit Th2 responses, such as Mepoluzimab, should be screened for latent *Stronglyloides stercoralis* infection given the danger of hyper-infection upon immunosuppression.



Abstract P20 Figure 1

P21 EVALUATING THE CLINICAL IMPACT OF CORTICOSTEROID SENSITIVITY AND INSENSITIVITY OF PERIPHERAL BLOOD MONONUCLEAR CELLS IN SEVERE ASTHMA

A Thomas, S Siddiqui, Y Amrani. *Department of Infection, Immunity and Inflammation, University of Leicester, Leicester, UK*

10.1136/thoraxjnl-2017-210983.163

Steroid insensitivity and the heterogeneous nature of asthma represent a significant clinical challenge for patients with severe asthma. The use of peripheral blood mononuclear cells (PBMC) in recent studies has allowed researchers to demonstrate that poor steroid response could be due to corticosteroid insensitivity in immune cells. These cells have been used as a model to investigate the underlying molecular mechanisms of corticosteroid resistance. These models were however inconclusive and have failed to consider asthma phenotypes. Our aim was to determine *in vitro* corticosteroid sensitivity of isolated PBMCs in T_H2 high and T_H2 low patients. Severe asthma patients as classified by the Global Initiative for Asthma were recruited and divided into T_H2 high and T_H2 low cohorts based on fractional exhaled nitric oxide (FeNO). Isolated PBMCs were stimulated with αCD3/28 alone or in the presence of dexamethasone (10^{-10} M-10^{-6} M). IL-5, IL-13 and IL-17 cytokine release were measured using ELISA. Correlation studies were carried out to determine whether the $LogIC_{50}$ or FeNO correlated with markers of asthma severity. PBMCs stimulated with αCD3/28 showed significant IL-5 and IL-17 release in T_H2 low but not T_H2 high patients. Production of IL-5 or IL-7 was dose-dependently suppressed by dexamethasone with different potencies. IL-13 was only significantly stimulated in T_H2 low patients and did not show suppression by dexamethasone. A significant negative correlation between αCD3/28 stimulated IL-17 production and FeNO was observed. Overall, PBMCs from severe asthmatics retain cell responsiveness to TCR engagement with production of T_H2 and T_H17 cytokines and inhibition by dexamethasone. Additional studies comparing T_H2 high vs T_H2 low patients are required to determine whether differences in *in vitro* CS response exist between these 2 categories of patients.

P22 INDUCIBLE LARYNGEAL OBSTRUCTIONS CAUSING BREATHING PROBLEMS: A STUDY CLASSIFYING PATIENTS' LARYNGOSCOPIC PRESENTATIONS ACCORDING TO THE ERS/ELS/ACCP 2013 INTERNATIONAL CONSENSUS CONFERENCE NOMENCLATURE

[1]C Slinger, [1]J Blakemore, [2]R Slinger, [1]A Vyas. *[1]Lancashire Teaching Hospitals, Preston, UK; [2]Lancaster University, Lancaster, UK*

10.1136/thoraxjnl-2017-210983.164

Introduction and Objectives An international task force proposed the term 'Inducible Laryngeal Obstruction' (Ilo) to describe a group of conditions which, in the literature, has over 40 descriptive terms, including, vocal cord dysfunction (VCD). The resultant nomenclature describes and details a range of laryngeal manifestations that create an obstruction to inspiratory or expiratory airflow. This study aims to trial the use of the 'laryngeal findings' aspect of the nomenclature to describe features of Ilo and to gain insight into the practicality of using these definitions in clinical practice.

Method Twenty-two prospective and twenty-eight retrospective analyses of video laryngoscopic assessments for Ilo were classified in a cohort of patients referred to our Tertiary Airways service who had no uncontrolled underlying respiratory symptoms. These video-laryngeal recordings were classified according to the consensus laryngeal nomenclature. The assessments were classified according to: onset of obstruction (glottic, supraglottic, or both), phase of respiratory cycle (inspiratory, expiratory, or both), onset timing (fast or slow) and resolution of symptoms (fast or slow). These classifications were conducted by two respiratory speech and language therapists and a consultant respiratory physician with extensive experience of completing such assessments to obtain diagnosis, with consensus being achieved before final rating.

Results Forty percent of patients had combined glottic and supraglottic presentation, 31% supraglottic and 29% glottic only. The majority of patients (61%) had sole inspiratory obstruction, and 67% had a fast onset of symptoms. Sixty-seven percent also had a fast resolution of symptoms; although this could not be reliably documented, as in our laryngoscopy protocol, when symptomatic, the SLT demonstrates to the patient how to reverse the obstruction with laryngeal control techniques following challenge testing to minimise patient distress, and begin therapy.