Various prognostic factors such as history of diabetes, alcoholism, and presence of hypo-albuminemia, coagulopathy, sepsis and lactic acidosis were taken into account. Calculations were made in regards to the Lung Injury Predictive Score (LIPS) as determined by Chest Roentgenogram score, Hypoxemia Score, PEEP Score and Compliance score. The LIPS score was calculated for projecting the severity of ARDS. The use of statins on various outcome measures was also observed.

Results A total of 46 patients were treated in the ICU for ARDS. The number of ventilator days averaged from 5–35 days. The incidence of predisposing conditions as well as risk modifiers was correlated with the LIPS score. All of these patients were on ARDS net protocol and received intravenous antibiotics. Statistical analysis revealed a favourable impact of prone positioning with steroids on the mortality, duration of ICU stay and ventilator days. A significant difference in the LIPS score was noted in patients receiving IV steroids and prone positioning on day 2. Use of statins also influenced the duration of ICU stay and a significant impact on the mortality of this cohort of patients.

Conclusions Prone positioning is an effective adjunct intervention in conjunction with intravenous steroids for treating severe ARDS. It is a valid option for patients with refractory ARDS to conventional treatment. More studies need to be done to validate the impact of statins on different outcome measures in the ICU.

Airway inflammation and infections

S78 PHENOTYPES OF INDUCED SPUTUM IN DIFFICULT TO TREAT ASTHMA

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Introduction and Objectives The clinical value of repeated induced sputum tests to monitor airway inflammation in children with severe asthma is contentious. In adult patients with severe asthma a management based on sputum eosinophil counts results in a reduction of exacerbations and fewer hospital admissions (Green R et al, Lancet 2002). This has not been shown in children. Several inflammatory phenotypes are described but clinical management strategies based on these have largely been unsuccessful. It has been suggested that the inflammatory phenotypes in the sputum are unstable over time (Fleming et al, Thorax 2012). We reviewed the results of induced sputum tests done as part of our severe asthma clinic to determine stability of inflammatory phenotypes in our patients.

Methods We reviewed all sputum induction results for children with a diagnosis of asthma who underwent inductions between April 2008 and June 2012 at our centre. Samples were processes using our standard protocol (Pin et al, Thorax 1992).

Samples were classified as eosinophilic (>2.5% eosinophils and <2.5% neutrophils), neutrophilic (>54% neutrophils and <2.5% Eos); mixed granulocytic (>2.5% eosinophils, >54% neutrophils); or paucigranulocytic (<2.5% eosinophils, <54% neutrophils) as previously suggested.

Results 34 patients, 19 males and 15 females, with a BTS of 3 to 5 had a total of 86 inductions. 22 patients had 2 inductions and the rest had between 3 and 5 inductions.

18 of the 34 patients had a eosinophilic profile on their first induction and 24 of the 34 patients had a eosinophilic profile in at least one sample. 29 of the 34 patients had >2.5% eosinophils (eosinophilc or mixed profile) in at least one sample. Of the remaining five who never had >2.5% eosinophils, four had a neutrophic profile and the remaining child had a persistent paucigranulocytic profile.

Using the above classification 25 out of the 34 patients switched phenotype at least once in the duration of the study.

Conclusions There is no treatment based on the neutrophilic phenotype classification therefore the presence and percentage of eosinophils present appears to be the most useful information gained from sputum induction. Based on our data and that of others, classification into several inflammatory phenotypes does not appear clinically useful.

S79 SPUTUM INFLAMMATORY CELL PROFILE IN CHILDREN WITH ACUTE ASTHMA AND FOLLOWING RECOVERY

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Background Airway inflammation in children experiencing an acute asthma exacerbation has been little studied. A previous study (1) reported high numbers of sputum inflammatory cells in children with acute asthma and a significantly lower number two weeks after the acute episode. Our principal objective was to study children after a longer follow-up period when the effects of oral steroid therapy has subsided and to compare children with asthma to a healthy control group.

Methods We collected sputum from children attending hospital with acute asthma following salbutamol bronchodilation, and, if necessary (and FEV_1>50% predicted), after nebulisation with 0.9% saline. Following recovery, sputum was obtained using hypertonic-saline induction. We also studied a control group of healthy children. Sputum samples were processed within 6 hours and a differential cell-count was obtained by counting inflammatory cells on a cytospin slide (2).

Results Paired sputum samples were obtained from fifteen children (median-age 11 years) and eight controls (median-age 13.5 years). Median number of days between sputum samples for children with asthma was 82 days (range 21–313). Sputum from children with acute asthma had a higher number of inflammatory cells and a higher percentage eosinophil count than control children (p=0.025, 0.015 respectively). Sputum from children with asthma at recovery had a higher percentage eosinophil count than control children (p=0.021), but total number of inflammatory cells were not significantly different. We did not find a significant decrease in total number of cells nor percentage neutrophils or eosinophils in the sputum of children with asthma between acute episode and recovery [see table 1]. In children with raised sputum eosinophils (>2.5%) during acute asthma sputum eosinophilia persisted at recovery.

Conclusion Sputum inflammatory cell counts and percentage eosinophils are elevated in children with acute asthma compared to children without asthma. We found no significant difference in either total or percentage neutrophil or eosinophil count between acute asthma and recovery. In children with eosinophilia >2.5% during acute asthma this persisted at recovery. These findings have implications for our understanding of the causes of asthma exacerbations in children.

1. Norzila MZ et al. AJRCCMed 2000:769–774
2. Pin I et al. Thorax 1992:25–29

Abstract S79 Table 1 Table to Illustrate Inflammatory cell Profile of sputum from Children with Asthma during acute exacerbation and at recovery and in Control Children

Inflammatory cells	Asthma acute exacerbation	Asthma recovery	Control
Total number cells [x10^3/ul]*	1.35 (0.14–13.99)	0.61 (0.04–3.22)	0.14 (0.06–3.77)
% neutrophils*	77.2 (24.5–97.3)	70.3 (11–94)	53.6 (13.5–96.8)
% eosinophils*	2.8 (0.0–54.5)	4.5 (0.0–46.0)	0.12 (0.0–2.0)

*values are median with range in parentheses.

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S78 Phenotypes of Induced Sputum in Difficult to Treat Asthma

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