Clinical characteristics of severe asthma and pre-school wheeze compared to non-severe paediatric cohorts in U-BIOPRED

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Background

The Unbiased Biomarkers for the Prediction of Respiratory Disease Outcomes (U-BIOPRED) consortium is an IMI funded public-private European collaboration to develop novel molecular biomarkers for the identification of asthma phenotypes and their clinical utility.

Aims

The over-arching aim of the project is to fully characterise severe asthma in children and adults, through the life course of the disease, using conventional and innovative systems biology, ‘omics, approaches.

Here we report on the baseline characteristics of the paediatric cohorts and factors which contribute to the burden of asthma, as measured by quality of life (QoL).

Methods

7 centres in 5 European countries recruited children to the following cohorts:

1. Severe school aged asthma (6 – 17 years)
2. Mild to moderate school aged asthma
3. Severe pre-school wheeze (1 – 5 years)
4. Mild to moderate pre-school wheeze

The severe cohorts were defined according to IMI criteria (Thorax 2011;66:910-7). They had frequent symptoms and/or frequent severe exacerbations and/or persistent airflow limitation despite ≥500mcg/day fluticasone propionate (FP) or equivalent (school age) or ≥200mcg/day FP or equivalent (pre-school) plus a trial of at least two other controller medications.

Mild to moderate cohorts had full or partially controlled symptoms according to GINA guidelines and were prescribed ≤250mcg/day FP or equivalent (pre-school cohort). All cohorts attended a screening and baseline visit. The severe cohorts will attend a follow up visit 12–18 months after baseline.

Results

Study Assessments

Baseline data including demographics, asthma history, exacerbations, atopy, family history, medications, exposure to environmental tobacco smoke (ETS) and socio-economic details were collected.

Asthma control was assessed using the Asthma Control Test (ACT) or Childhood ACT (CACT) and the Paediatric Asthma Quality of Life Questionnaire (PAQLQ) or Paediatric Asthma Caregivers Quality of Life Questionnaire (PACQLQ).

Spirimetry pre and post bronchodilator, exhaled nitric oxide (FeNO), sputum induction, skin prick testing, total IgE and specific IgE tests to the six most common aeroallergens, plethysmography and forced oscillation technique were performed.

Blood, urine, throat swabs, nasal brush and breath samples were collected for ‘omics analyses. Urinary cotinine was measured as a marker of exposure to ETS.

Results Cont.

Conclusions

Children with severe asthma and pre-school wheeze have poor quality of life despite significant treatment - asthma symptoms, exacerbations and lung function have the greatest impact on QoL.

Integration of the clinical and ‘omics data will help to define sub-phenotypes, indentify therapeutic targets and allow comparisons with adult cohorts.