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DOI: 10.1183/09031936.00022410

Asthma predictive factors in infants with bronchiolitis: asthma risk at 13–20 years of age

To the Editors:

MATRICARDI *et al.* [1] presented an interesting comparison on the persistence of wheezing at 10–13 yrs of age between two birth cohorts from the UK and Germany. When the cohorts were re-evaluated by harmonising the data, family history of asthma, absence of recurrent rhinitis at <1 yr, recurrent chest infections at <2 yrs and atopic sensitisation at <3–4 yrs were independent risk factors for wheezing at 10 years, with some differences between early life wheezers and non-wheezers [1]. When three or four of these risk factors were present, the algorithm was highly specific but not sensitive in predicting persistent wheezing at >10 yrs of age: sensitivity 0.53, specificity 0.85 and positive likelihood ratio 6.38 [1].

CASTRO-RODRIGUEZ *et al.* [2] introduced the first asthma predictive index (API) based on the Tucson birth cohort study to predict asthma risk at school age in children who wheezed at <36 months of age. Major risk factors were asthma in parents and atopic dermatitis in the child, and minor risk factors were allergic rhinitis, wheezing apart from cold and blood eosinophilia. Loose index (wheezing at <36 months and one major or two minor criteria) means moderate asthma risk, and stringent index (repeated wheezing at <36 months and one major or two minor criteria) means high asthma risk. The 85% specificity and 42% sensitivity of the loose index mean a positive likelihood ratio of 2.2 with a modest predictive impact.

The 97% specificity and 16% sensitivity of the stringent index mean a likelihood ratio of 1.2 only.

API was later modified (mAPI) by adding atopic sensitisation to inhaled allergens, confirmed by allergen-specific immunoglobulin E measurements or positive skin tests, as a minor criterion [3]. Though this modification was an obvious improvement with a more objective risk assessment, mAPI has not been validated by follow-up studies.

The results of long-term Scandinavian post-bronchiolitis follow-ups have highlighted the need to revise the algorithms to be more suitable for infants treated for bronchiolitis in hospital, as summarised in two reviews [4, 5]. The outcome of early life wheezers is connected with disease severity, invasiveness of infection and triggering virus not possible to be taken into account in cohort studies with parent-reported symptoms. In addition, treatment in hospital and outpatient clinics of hospitals enables assessment of more objective risk factors by virological and allergological examinations. The suggested hospitalised children's API (hAPI) consists of three major criteria (parental asthma, atopic dermatitis or food allergy in the child and sensitisation to inhaled allergens) and three minor criteria (sensitisation to food allergens, wheezing by viruses other than RSV and blood eosinophilia when healthy) [1, 2]. In addition, parental smoking, maternal smoking in particular, further increases the asthma risk.

Like mAPI, the capacity of hAPI to detect children with substantial asthma risk has not been validated by prospective follow-up studies.

One algorithm does not fit all [1]; separate algorithms are needed for early life wheezers and non-wheezers, and particularly for infants hospitalised for bronchiolitis. In fact, separate algorithms are needed for infants presenting with bronchiolitis at <6 and 6–12 months of age.

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Statement of Interest: None declared.

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DOI: 10.1183/09031936.00036710