

## CORRESPONDENCE

## Rhinovirus-induced interferon production in asthma

After reading the article by Sykes *et al*,<sup>1</sup> we would like to comment on impaired response to rhinovirus in relation to asthma severity. The authors examined rhinovirus-induced interferon (IFN) production in a cohort of asthmatic patients compared with controls. While they previously reported in this population a reduced IFN production in cells from bronchoalveolar lavage,<sup>2</sup> they fail to document such an impaired response in bronchial epithelial cells.<sup>1</sup> The authors propose to ascribe such discrepancy to asthma severity, since epithelial cells successfully cultured derived from a subset of patients with milder clinical manifestations. However, (1) the authors cannot conclude on IFN production in most severe patients who were not examined in this study; (2) the cohort on the whole did not cover all the spectrum of disease severity, with most patients having mild/moderate asthma; (3) impaired IFN production has been previously documented in epithelial cells cultured from well-controlled asthmatic patients.<sup>3 4</sup>

To substantiate the confinement of defective IFN production upon rhinovirus infection to the more severe expressions of the disease the authors quote their recent paper in severe therapy-resistant

asthmatic children.<sup>5</sup> However, we recently found a defective IFN induction and increased viral replication in bronchial epithelial cells of preschool children with mild asthma.<sup>6</sup> None of the children in our report were treated with oral or high-dose inhaled corticosteroids, the majority of them receiving only inhaled rescue salbutamol. Even more compelling is our finding of similar innate immune impairments in atopic children without symptoms of asthma. Clearly, our results suggest that asthma severity is not an issue closely related with IFN responses to rhinovirus infection. Of note, we also reported that rhinovirus-induced IFN production in epithelial cells was inversely related to IL-4 expression and eosinophil counts in bronchial biopsies, suggesting that Th2 inflammatory milieu, rather than asthma severity, is tightly linked with impaired innate immune responses to rhinovirus.

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## REFERENCES

- 1 Sykes A, Macintyre J, Edwards MR, *et al*. Rhinovirus-induced interferon production is not deficient in well controlled asthma. *Thorax* 2014;69:240–6.
- 2 Sykes A, Edwards MR, Macintyre J, *et al*. Rhinovirus 16-induced IFN- $\alpha$  and IFN- $\beta$  are deficient in bronchoalveolar lavage cells in asthmatic patients. *J Allergy Clin Immunol* 2012;129:1506–14.
- 3 Wark PAB, Johnston SL, Bucchieri F, *et al*. AsthmaOtic bronchial epithelial cells have a deficient innate immune response to infection with rhinovirus. *J Exp Med* 2005;201:937–47.
- 4 Contoli M, Message SD, Laza-Stanca V, *et al*. Role of deficient type III interferon-lambda production in asthma exacerbations. *Nat Med* 2006;12:1023–6.
- 5 Edwards MR, Regamey N, Vareille M, *et al*. Impaired innate interferon induction in severe therapy resistant atopic asthmatic children. *Mucosal Immunol* 2013;6:797–806.
- 6 Baraldo S, Contoli M, Bazzan E, *et al*. Deficient antiviral immune responses in childhood: distinct roles of atopy and asthma. *J Allergy Clin Immunol* 2012;130:1307–14.