

Nasal cytology identifies healthy and damaged nasal epithelial cells - Reply

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To the Editor,

we would like to thank Rafael Martínez-Girón, Hugo Cornelis van Woerden, and Cristina Martínez-Torre, who confirmed post-viral, namely during rhinovirus infection, cytomorphological alterations loaded to nasal epithelial cells (1). The outcomes of that study were consistent with our research that described structural modification during viral infection (2,3). In this regard, the first evidence concerned vacuolar degeneration at the cytoplasmic level and further nuclear impairment, mainly nuclear alterations, such as intranuclear halo (4). In particular, it has to note that the “halo” is inside the cellular membrane as confirmed by electronic microscopy (3).

Analyzing the subjects investigated by the authors, it seems that some relevant details were lacking, mainly concerning the type of perennial rhinitis. In fact, as reported, all subjects were treated with oral H1 antagonists and intranasal corticosteroids. Both medications are commonly prescribed for allergic rhinitis. Besides, 2 patients had nasal polyps and one asthma. There is a reasonable suspicion that they suffered from allergic rhinitis. In conflict with this hypothesis, eosinophils were, however, very scarce. Remarkably, perennial rhinitis was not classified in their study. Consistently, we would underline the clinical relevance of nasal cytology in the workup of nasal disorders (5). Nasal cytology is a simple, easy, and repeatable technique that is very fruitful in clinical practice. Nasal cytology carefully defines the phenotype and endotype of rhinitis, so it is a classic example of Precision Medicine (6) and it is a point-of-care test (7). Moreover, it has been recently standardized, thus the methodology has been rigorously vali-

dated (8). In the context of the topic, a close link exists between allergic rhinitis and rhinovirus. It was demonstrated that allergic patients have a mucosal inflammation that involves adhesion molecule machinery, mainly intercellular adhesion molecule 1 (ICAM-1), and is associated with functional impairment, such as nasal airflow limitation (9-11). Interestingly, ICAM-1 is also the main receptor for rhinovirus: this curious coincidence explains the increased susceptibility to infections in allergic patients (12). These concepts underline the importance of a precise and documented diagnosis of rhinitis that is the requisite for a tailored treatment: the so-called Personalized Medicine (13).

In conclusion, nasal cytology could be envisaged as a mandatory test to identify the phenotype, and endotype to optimize the management of patients with perennial rhinitis.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

References

1. Martinez-Giron R, van Worden HC, Martinez-Torre C. Ciliated nasal epithelial cells damage and human rhinovirus infection: cytological findings. *Acta Biomedica* 2020; 91 (1): (in press)
2. Gelardi M, Ciprandi G. Ciliocytophthoria of nasal epithelial cells after viral infection: a sign of suffering cell. *Acta Biomed* 2019; 90 (2-S): 7-9
3. Gelardi M, Iannuzzi L, Seccia V, Quaranta N. Ciliocytophthoria: Cytomorphological Modifications in Viral Infections of

- the Nasal Mucosa. *J Cytol Histol* 2016; S5:005
4. Mäkelä MJ, Puhakka T, Ruuskanen O et al. Viruses and bacteria in the aetiology of the common cold. *J Clin Microbiol* 1998; 36: 539-542
 5. Gelardi M, Fiorella ML, Russo C, Fiorella R, Ciprandi G. Role of nasal cytology. *Int J Immunopathol Pharm* 2010;23:45-9
 6. Gelardi M, Landi M, Ciprandi G. Nasal Cytology: a Precision Medicine tool in clinical practice. *Clin Exp Allergy* 2018;48:96-7
 7. Gelardi M, Landi M, Ciprandi G. The pragmatic role of Nasal Cytology: point-of-care testing to implement Precision Medicine in clinical practice. *Rev Alergia Mex* 2018;65:179-83
 8. Ciprandi G, Silvestri M. Standardization of the nasal cytology in the work-up of allergic rhinitis. *Ann All Asthma Immunol* 2019;123:213-6
 9. Canonica GW, Ciprandi G, Pesce GP, Buscaglia S, Paolieri F, Bagnasco M. ICAM-1 on epithelial cells in allergic subjects: a hallmark of allergic inflammation. *Int Arch Allergy Appl Immunol* 1995;107:99-102
 10. Ciprandi G, Cirillo I, Vizzaccaro A, Milanese M, Tosca MA. Nasal obstruction in patients with seasonal allergic rhinitis: relationships between allergic inflammation and nasal airflow. *Int Arch Allergy Immunol* 2004;134:34-40
 11. Ciprandi G, Marseglia GL, Klersy C, Tosca MA. Relationships between allergic inflammation and nasal airflow in children with persistent allergic rhinitis due to mite sensitization. *Allergy* 2005;60:957-60
 12. Cirillo I, Marseglia GL, Klersy C, Ciprandi G. Allergic patients have more numerous and prolonged respiratory infections than non-allergic subjects. *Allergy* 2007;62(9):1087-90
 13. Licari A, Castagnoli R, Bottino C, Marseglia A, Marseglia GL, Ciprandi G. Emerging drugs for the treatment of perennial allergic rhinitis. *Exp Opin Emerg Drugs* 2016;21:57-67
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- Received: 5 January 2020
Accepted: 6 February 2020
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