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LETTER TO THE EDITOR

Evaluation of cytogenetic damage in exfoliated nasal epithelial cells contributes to a better understanding of the pathogenesis of rhinosinusitis[☆]



Avaliação do dano citogenético em células esfoliadas nasais contribui para uma melhor compreensão da patogênese da rinossinusite

Dear Editor,

We read the manuscript of Drummond et al.¹ recently accepted for publication in the Brazilian Journal of Otorhinolaryngology titled “Micronucleus count in nasal epithelial cells from patients with chronic rhinosinusitis and polyps” with much interest. In this article, the authors were able to detect high frequencies of micronucleus on nasal cells of patients with rhinosinusitis when compared to controls. In this regard, we were able to formulate some questions in order to contribute to the present work.

In the Results section, it was mentioned that “MN was not increased in patients with AERD ($p = 0.310$). There was also no association between nasal surgery in the previous 5 years and MN count ($p = 0.251$)”. From our point of view, it would be interesting to present these data in the manuscript, even if there is no statistical difference.

In this study, the experimental group was older than the control group. Significant statistically differences ($p < 0.05$) were found between groups. Taking into consideration that micronucleus frequency increases with increasing age, the authors justify such preferential treatment by means of three References in Discussion, but some of them were not properly interpreted. For example, the article published by Squier and Kremer (Reference number 24) did not investigate micronuclei in the exfoliated epithelial cells.² Moreover, the paper published by Calderon-Garciduenas

(Reference number 26) did not evaluate the micronucleus assay.³

Tolbert et al.⁴ have introduced some metanuclear changes indicative of cytotoxicity for the micronucleus assay in exfoliated cells, such as pyknosis, karyolysis, and karyorrhexis. The approach is important because cytotoxicity is a confounding factor for mutagenicity studies.⁵ For example, if cytotoxicity is increased the micronucleus frequency decreases because micronucleated cells are lost as a result of cellular death. Therefore, it would be interesting to know if and to what extent patients with rhinosinusitis present increased cytotoxicity as well as to evaluate the biological consequences of this on micronucleus incidence. Certainly, cytotoxicity is present in nasal mucosa from patients with chronic rhinosinusitis because this pathological condition induces cellular death as a result of inflammatory process.⁶

In any case, the results of this study clearly indicate that people suffering chronic rhinosinusitis have high a frequency of micronucleus in nasal cells. This means that genomic instability is present in these patients. It has been well established that genomic instability plays a crucial role in the pathogenesis of chronic degenerative diseases, such as cancer. For this reason, further studies investigating chromosome damage as well as cellular death from other contexts and paradigms in these patients are very important for better understanding the pathogenesis of rhinosinusitis.

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Conflicts of interest

The authors declare no conflicts of interest.

References

1. Drummond RL, Rhoden CR, Lubianca Neto JF, Fleck ADS, RCPK Padoin, Amantéa SL. Micronucleus count in nasal epithelial cells from patients with chronic rhinosinusitis and polyps. *Braz J Otorhinolaryngol.* 2019, <http://dx.doi.org/10.1016/j.bjorl.2019.05.004> [Epub ahead of print].

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2. Squier CA, Kremer MJ. Biology of oral mucosa and esophagus. *J Natl Cancer Inst Monogr.* 2001;29:7–15.
3. Calderon-Garciduenas L, Wen-Wang L, Zhang YJ, Rodriguez-Alcaraz A, Villarreal-Calderón A, Villarreal-Calderón A, et al. 8-Hydroxy-2-deoxyguanosine, a major mutagenic oxidative DNA lesion, and DNA strand breaks in nasal respiratory epithelium of children exposed to urban pollution. *Environ Health Perspect.* 1999;107:469–74.
4. Tolbert PE, Shy CM, Allen JW. Micronuclei and other nuclear anomalies in buccal smears: methods development. *Mutat Res.* 1992;271:69–77.
5. Torres-Bugarín O, Zavala-Cerna MG, Nava A, Flores-García A, Ramos-Ibarra ML. Potential uses, limitations, and basic procedures of micronuclei and nuclear abnormalities in buccal cells. *Dis Markers.* 2014:956835.
6. Kortekaas Krohn I, Bobic S, Dooley J, Lan F, Zhang N, Bachert C, et al. Programmed cell death-1 expression correlates with

disease severity and IL-5 in chronic rhinosinusitis with nasal polyps. *Allergy.* 2017;72:985–93.

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