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Open and clean: the healthy nose

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Summary. The nose exerts many functions, mainly for the respiration and the olfaction and represents the first doorway for the oxygen, but also for pathogens. The present Supplement reports some clinical experiences concerning the use of a new internal nasal dilator in different settings, including nasal obstructive disorders, obstructive sleep apnea syndrome, continuous positive active pressure (CPAP), and sport activity. The outcomes support the concept that a healthy nose should be maintained ever patent and free from secretions, as impaired nasal function can significantly affect quality of life. Therefore, an "open and clean nose" contributes in a relevant way to the subjective wellness. (www.actabiomedica.it)

Key words: nasal functions, nasal obstruction, nasal lavage, internal nasal dilator, external nasal dilator, nasal strip

The nose exerts many functions, mainly for the respiration and the olfaction (1-3). Upper airways represent the first doorway for the oxygen, but also for pathogens, including virus, bacteria, and fungi, allergens, cigarette smoke, and pollutants. The nose provides to defend the organism from noxious agents exerting three main activities: warming, moistening, and filtering the inspired air. The last function is guaranteed by an effective and efficient mechanism: the muco-ciliary clearance. The nasal goblet cells produce the mucus covering the mucosa: this mucus layer is actively and continuously transported from the nose to the rhino-pharynx (4-6). The mucus entraps and removes noxious matters so preserving the respiratory system. In addition, an active immune response occurs at nasal level: macrophages and microphages embed foreign matters that arrive, conveniently processed, to the draining nodes where the immune adaptive response begins (7, 8). Innate immunity is also present in the nose where it represents the first non-specific defensive barrier against aggressive factors (9). Therefore, the nose exerts a crucial role in defending the organism like a first-line sentinel.

On the other hand, the nose is a high-resistance tract where the inspired airflow becomes turbulent thanks to the turbinate structure. The turbinate actually serves to create a whirl air movement and to offers a wide surface to warm and moisten the inspired air. Altogether these mechanisms guarantee a physiological nasal health (10). However, these complex functions may easily alter in consequence of several pathophysiologic mechanisms, including infection, inflammation, trauma, mechanical abnormalities, physical stimuli, and so on.

In clinical practice, two main pathophysiological mechanisms cause an impaired nasal physiology: the nasal obstruction and the mucus hyperproduction (11-14). The nasal obstruction may be due to several causes, including allergy and infection, and implicates reduced oxygenation, with severe systemic consequences, such as hypoxemia, and oral breathing, such as the primary mechanism promoting exercise-induced asthma. On the other hand, the mucus stagnation allows microbial overgrowth, rhinosinusitis and otitis, and post-nasal drip-triggered cough.

Another relevant issue is the close link between upper and lower airways, namely between rhinitis and asthma (15) and between nasal obstruction and obstructive sleep apnea (16). Therefore, a close and

"dirty" nose results in a vicious circle that promotes, maintains, and amplifies the respiratory infections and inflammatory disorders.

On the basis of this background, opening and cleaning the nose is the most simple and useful relief that has to be pursued in the common practice and at all ages.

Nasal obstruction may be controlled by physical, medical, and surgical treatments. In this regard, the nasal lavage represents the most safe and effective way to obtain a normal nasal patency. Hypertonic or isotonic saline solution may be used by different ways of administration, including spray, nasal shower, irrigation, insufflation, fumigation, and aerosol. However, nasal irrigation represents the most effective way to remove mucus as abundant quantity of saline solution pass across the nasal cavities (17, 18). However, it has to be highlighted that only sterile solutions must be used as infections (also fatal!) may occur with improper home-made nasal lavage (19).

Another simple, rapid, and cheap way to open the nose is the use of dilators, both external and internal (20). They act by a mechanical dilation of the nasal external valve so the nasal resistance significantly diminishes.

This Supplement reports some clinical experiences concerning the use of a new internal nasal dilator in different settings, including nasal obstructive disorders, obstructive sleep apnea syndrome, continuous positive active pressure (CPAP), and sport activity. In addition, nasal cytology is a diagnostic technique that investigates the presence of inflammatory cells in the nose (21-23). It may be also useful to evaluate the well-being of nasal epithelial cells. In this regard, nasal cytology may allow to detect the ciliocytophthoria phenomenon, such as a degenerative process in the ciliated cells observable during infections, mainly of viral origin. Therefore, nasal cytology may define the nose wellness.

In conclusion, many nasal disorders may significantly improve with two simple actions: to open and to clean the nose. These actions may be easily obtained by with nasal lavage and dilator. Actually, a healthy nose should be maintained ever patent and free from secretions, as impaired nasal function can significantly affect quality of life (23). Thus, an "open and clean nose" contributes in a relevant way to the subjective wellness.

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