The Use of Xylometazoline and Nasal Rebound Congestion

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Key points:

- Introduction
- Pharmacological mechanism
- Adverse effects: Rebound Nasal Congestion
- Conclusion

Introduction

Xylometazoline is a frequently utilized, over-the-counter (OTC) topical nasal decongestant favored for its fast-acting relief of nasal blockages caused by allergic rhinitis, sinusitis, and the common cold. As a member of the imidazoline family, it exerts rapid vasoconstriction within the nasal cavity. [1] However, the excessive use of this nasal spray can be very harmful in the long run. It can precipitate an uncomfortable condition known as rhinitis medicamentosa (RM) or, rebound nasal congestion.

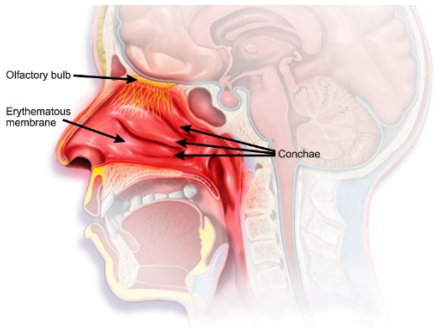


Figure 1: *Nasal Cavity Anatomy*

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Pharmacological Mechanisms

Xylometazoline hydrochloride primarily functions as an alpha-adrenergic agonist, displaying a strong affinity for alpha-2 adrenoreceptors and, to a lesser extent, alpha-1 receptors. These receptors are broadly distributed across the vascular network of the nasal mucosa, which includes both capacitance vessels (venous plexuses) and resistance vessels (arterioles).[2]

It acts by causing a strong contraction of the blood vessels in the nasal mucosa through direct stimulation of α-adrenergic receptors, which leads to a reduction in swelling of the surrounding tissues due to decreased blood flow in the mucosa.[3] This vasoconstriction of the venous sinuses gives the user an instant relief from nasal congestion.

The decongestive impact of 0.1% xylometazoline usually takes effect within minutes and persists for up to 10 hours, providing an efficient short-term remedy for nasal obstruction. [4]

Adverse Effects: Rebound Nasal Congestion

The nasal stuffiness caused by overuse of nasal vasoconstrictors has been ascribed to rebound swelling when the decongestive effect of the drug disappears. [5]

2 hypotheses have been proposed to pinpoint the exact cause of RM, ischemia of the nasal mucosa due to vasoconstriction of submucosal arterioles resulting from intense stimulation of alpha-2 adrenergic receptors is one hypothesis that has been proposed. The other is the downregulation of alpha-2 adrenergic receptors due to repeated stimulation by nasal decongestants. [6]

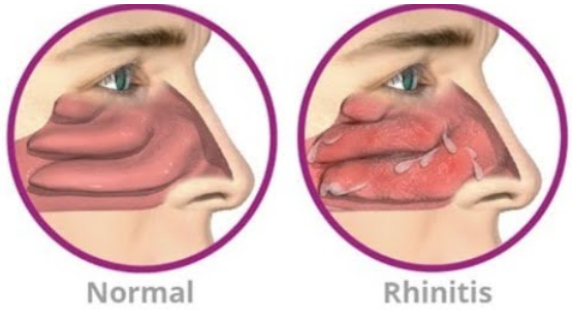


Figure 2: *Normal Nasal Cavity vs. One Effected by Rhinitis*

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Rebound congestion can cause a vicious cycle. You might keep using the spray to breathe more easily, but this can lead to overuse. At this point, not using the spray can lead to headaches or even the feeling that you're suffocating. [7]

Conclusion

Even though xylometazoline is a very effective OTC nasal decongestant, its long-term use has proved to harm the user by posing as a risk for RM or rebound nasal congestion. Xylometazoline is also addictive, and may cause headaches, nasal congestion, and sensation of nasal blockage upon sudden withdrawal.

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