

## Title: Occupational Nonallergic Rhinitis and Dysautonomia: An Emerging Occupational Health Concern

### Abstract:

Occupational Nonallergic Rhinitis (ONAR) is an underrecognized condition that affects a significant proportion of workers exposed to irritant chemicals, fumes, or particulates. While commonly considered a localized upper airway disorder, emerging evidence suggests a potential link between ONAR and systemic autonomic dysfunction, particularly postural orthostatic tachycardia syndrome (POTS). This project aims to raise awareness about the disabling impact of ONAR and its broader neurologic implications by integrating literature findings with a clinically relevant case.

The highlighted case involves a firefighter exposed to ammonium bifluoride and nitric acid during a large-scale industrial fire response. Following this acute exposure, the patient developed persistent rhinitis symptoms—nasal congestion, epistaxis, facial pain—and was ultimately diagnosed with nonallergic vasomotor rhinitis. Over time, additional systemic symptoms emerged, including exertional dizziness, visual disturbances, and fatigue. Autonomic testing confirmed POTS. These symptoms significantly impaired his ability to wear respiratory protective equipment, eventually leading to medical retirement and a permanent partial disability rating.

This project also draws on the 2006 study by Elsheikh & Badran, which evaluated 78 idiopathic rhinitis patients and found 100% had abnormal autonomic responses—highlighting a compelling neuroimmune connection. Our case supports the theory that persistent mucosal inflammation from ONAR may contribute to systemic dysautonomia, especially in high-risk occupational settings.

The findings emphasize the need for broader diagnostic protocols post-exposure, increased interdisciplinary collaboration between ENT, occupational medicine, and neurology, and the inclusion of autonomic screening in fitness-for-duty evaluations. Recognizing ONAR not just as a nasal disorder, but as a potentially disabling systemic condition, is key to preventing delayed diagnoses, prolonged suffering, and occupational displacement.