

Diagnostic Challenge: Occupational Rhinitis

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ABSTRACT

Occupational rhinitis is a work-related disease that results from nasal exposure to toxic and harmful substances in the workplace. Both allergic and nonallergic mechanisms may be involved. It has a very typical presentation and worsens with continued exposure. There is a very wide list of substances that cause this disease, mainly products associated with ammonia. The diagnosis is made based on the clinical manifestations and the first line treatment is the cessation of exposure. The authors present a case report of a 52-year-old woman, who worked as laboratory assistant in techniques of biology, physics and chemistry, in a secondary school, for 20 years. Preparation of ammoniacal solutions and solutes in association with the manipulation of the products without personal protective equipment, led to the development of a clinical picture compatible with the diagnosis of occupational rhinitis. In the clinical history, the symptomatology described by the patient worsened in periods of labor exposure and was absent in vacation periods, which is typical of occupational pathology. Several treatments were attempted, medical and surgical, before occupational rhinitis was suspected. However, improvement of the clinical picture with work reallocation, led to the assumption that occupational rhinitis was the most likely diagnosis. This case demonstrates that the diagnosis of occupational rhinitis can be easily missed, if we ignore the occupational exposure of patients, which can lead to unnecessary and costly medical interventions, since the only effective treatment is the cessation of exposure to the causal agent.

Keywords

Occupational medicine, Occupational rhinitis, Ammonia, Work-related disease.

Introduction

Occupational rhinitis is a work-related disease that results from nasal exposure to toxic and harmful substances in the workplace. Both allergic and nonallergic mechanisms may be involved [1-3]. Occupational allergic rhinitis (OAR) is defined as allergic rhinitis induced, caused and worsened by inhaling work-derived agents into the nasal cavity. Allergic rhinitis is an allergic disease with three main symptoms: sneezing, watery rhinorrhea and nasal congestion, which are mediated by immunoglobulin E (IgE) [4,5].

Both pathologies, if not correctly identified and contextualized,

can be confused [6]. On the other hand, non-allergic Occupational rhinitis encompasses different types of rhinitis caused by the work environment through irritant, non-immunological mechanisms [7]. It is characterized as an inflammatory disease, with persistent or intermittent symptoms of nasal pruritus, sneezing, rhinorrhea, and obstruction of nasal airflow due to occupational exposure to immunogenic and/or irritative agents and relief during periods of absence from work [1,2,5,8].

The diagnosis of occupational rhinitis is based on the clinical history, being supported by the objective examination, the positivity of skin prick tests, the presence of specific IgE antibodies and the nasal challenge tests. Bardana proposed a classification system for Occupational Rhinitis (OR) that includes uncomfortable OR (exaggerated olfactory capacity for perfumes and detergents),

irritative OR (exposure to gases, ammonia, tobacco smoke, formalin or capsaicin, with a non-specific inflammation of the nasal mucosa, not dependent on the immunological mechanism), Corrosive OR (exposure to high concentrations of soluble and irritating gases, for example ammonia).

Nasal inflammation is characterized by ulcerations resulting in irreversible changes in nasal function, particularly olfaction) and Allergic OR (immunological mechanism mediated by IgE) [5,10].

Case Report

We present the case of a 52-year-old woman, without any previous history of pathology or smoking, who worked as laboratory assistant in techniques of biology, physics and chemistry, in a secondary school, for 20 years. Her daily tasks (8h) were preparation of chemical solutions with the manipulation of solvents and chemical solutes (mostly ammoniacal products) and manual washing (with appropriate gloves) of the materials used by the students and teachers in chemical experiments. She didn't wear any face mask during her labor activities and the hood used in the laboratory had an insufficient capacity for the extraction of gases and vapors.

The clinical manifestations of sneezing, nasal pruritus and rhinorrhea began after 10 years of occupational exposure with progression to nasal flow obstruction, without clinical improvement with the medical treatment for symptom relief, but with total absence of symptoms during periods of absence from work (weekend and vacation).

Physical examination showed friable nasal mucosa with easy bleeding and crusting. Due to subsequent clinical worsening, in particular of nasal obstruction, the patient was medicated with topical nasal corticosteroids in association with nasal washing with saline solution, but also without improvement. Given the deterioration of the clinical picture and the lack of response to the treatment prescribed she was referred to Otorhinolaryngology. The examination revealed a nonobstructive right nasal septum deviation with slight hypertrophy of the inferior turbinates. A computed tomography scan of the paranasal sinuses was performed, which corroborated the findings in the nasal examination, revealing a dextro-convex deviation of the nasal septum, which was associated with a moderate hypertrophy of the mucosa covering the right and middle nasal turbinates, therefore reducing the amplitude of the nasal cavities.

A surgical intervention was performed with turbinectomy and septoplasty for symptomatic improvement. The patient remained asymptomatic after the procedures, however, after returning to work, presented the same clinical symptoms and complaints already present before the surgery.

The patient was subsequently referred to Immunoallergology for further investigation with documentation of nasal hyperreactivity after exposure to the work components. The immunological study was inconclusive and the skin prick tests were negative, but the work exposure products were not tested.

Ultimately, since no other measure was effective and the symptoms were associated with work, the patient was reallocated to a different workstation with resolution of the symptoms, leading to the assumption that Occupational Rhinitis was the most likely diagnosis.

Discussion

In an occupational disease if the occupational exposure isn't acknowledged as the cause of the problem and consequently no measures are taken to minimize or prevent such exposure, the causative agent will persist, causing the disease to worsen or become intractable [2,4].

In this case, the etiology of rhinitis was attributed to an allergic component with no regard for the occupational exposure. Furthermore, invasive treatments including surgery were attempted without success, before all measures of allergy eviction were tried, because the occupational factors were not initially considered.

A varied number of products handled by the patient were posteriorly identified, with particular emphasis in ammonia, presumed to be the most likely causal agent.

Occupational rhinitis is a condition that is often underdiagnosed with implications on the workers quality of life, economic burden and an impact on productivity. Therefore, it should be actively sought by medical practitioners who examine patients that are exposed to chemicals, with investigation of the substances used, symptom screening, and diagnostic tests. Besides the occupational exposure to toxic substances, other nasal pathologies may aggravate the complaints of rhinitis, like the presence of nasal septum deviations, septal perforations and hypertrophy of the inferior turbinates, all related with occupation of volume in the nasal cavity and disturbance of the air flow [3,9]. Nevertheless, cessation of exposure in association with medical therapy for symptom relief remains the most effective treatment for occupational rhinitis [4].

Conclusion

According to the classification for occupational rhinitis (OR), this case may represent an example of corrosive occupational rhinitis [5].

The authors emphasize the importance of a patient's occupational history, namely his profession and occupational exposure, that may be related to work-related diseases with serious health consequences, like the case report presented. Occupational rhinitis is an occupational disease that is frequently underdiagnosed and should be considered in all patients with symptoms of rhinitis associated with a positive occupational exposure.

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