

An unusual occupational rhinitis: a case report

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Allergic rhinitis, when not related to proteic allergens, are not easy to diagnose. We report here a case without any relation with a high molecular weight allergen.

A 35 year old male patient reported rhinitis, anosmia and epistaxis, without any bronchial or cutaneous signs, for months. Symptoms seemed to have an occupational rhythm disappearing over a few days during vacations and relapsing within a few days after returning to work. The patient also reported exacerbations 4 to 5 hours after wine consumption.

He had been working for many years in a coffee factory making coffee-pads without any masks or protective gloves and was regularly exposed to coffee dust and paper filter system including sulfur dioxide (SO₂) and sulphites (SO₃), in concentrations below regulatory standards.

ENT explorations only found a non-specific inflammatory rhinitis. There were no septal deviation, tumor or signs of acute or chronic sinonasal disease such as secretions, crusts and polyps. Lung function tests were performed with a normal spirometry without any reversibility. No atopic conditions and no history of any previous respiratory disease were found.

Immediate-reading skin prick tests were negative for coffee, coffee-pads and sodium metabisulphites (SMBS). However, SMBS prick tests were positive a few hours later with burning, itching sensation and infiltrating erythema.

SMBS epidermo-tests (1% Pet.) were positive (++) in 24 hour-reading (Figure 1). An « as is » SMBS control was performed and was negative at 30 minutes.

A nasal provocation test with a moistened fiber decoction was performed and was considered positive with immediate epistaxis and rhinorrhea.

Sulphites oral provocation test (up to a cumulative dose of 680 mg sulfites) triggered nasal pruritus, rhinorrhea and an 11% drop in FEV1 (i.e. 500 ml) at the end of the test (after 6 hours). As a result, the test was considered positive, although the patient recovered spontaneously, without any treatment.

Green coffee IgE was < 0.1 KUI/l (ThermoFisherScientific, Uppsala Sweden).

The patient was then moved to another area of the factory, with other duties, and the occupational symptoms disappeared.

Skin tests results can lead to discussion because of epidermo-tests positivity. Such apparent mismatch between clinical symptoms (rhinitis due to SMBS, typically evocative of an IgE-mediated response or chemical SO₂ irritation) and epidermo-test results (showing infiltrated erythema in non-immediate reading) have already been described for Ammonium Persulphate[1] and for 2-chloroacetophenone[2]. These may weigh in favor of the same allergic mechanism between low and high molecular weight molecules induced allergic contact dermatitis. Very low exposure may explain the lack of cutaneous signs, whereas the nasal mucosa, having a better absorption, has revealed the disease. Furthermore, associations between allergic contact dermatitis and respiratory signs have also been reported[3]. One of these cases described a combined skin and respiratory symptoms in a 26 year old man working as site foreman, mimicking atopic disease following airborne occupational exposure to the biocides Methylisothiazolinone (MI) and Methylchloroisothiazolinone (MCI). The symptoms began with respiratory signs (dry cough and rhinitis) and then a few days later, an eczematous eruption appeared. Patches tests with the European baseline battery were performed and were positive for MI (2000 ppm aq.) and MCI (200 ppm aq.). Pricks tests were also carried out with aqueous solutions of patches tests preparations of MI and were negative. In an other case, a 24 year old woman hairdresser, experienced episodes of rhinitis, dyspnea and cough 1 hour after bleaching powder exposition. Patches tests were positive to Ammonium Persulfate after 48 and 72 hours. Conversely, prick tests with bleaching powder and prepared ammonium persulfate were negative.

The limitation of this case is that no controls were challenged, but we considered that epistaxis results from inflammation and not from irritation or other causes. There were no other symptoms to evoke possible causes of epistaxis, e.g., unilateral nasal blockage, facial pain, headaches, facial swelling/deformity, no South-East Asian origin (nasopharyngeal carcinoma), no loose teeth or otalgia (according to epistaxis update[4]). Furthermore,

olfactory dysfunction may result here from upper respiratory inflammation and nasal obstruction. There were no cranial traumatism or any associated signs.

These results may support the use of non-immediate epidermal-test reading (along with immediate-reading skin prick tests) in case of occupational rhinitis, involving airborne particules , underlying T cell-mediated hypersensitivity reactions, as previously suggested[5].

Non-immediate epidermal-test readings can be useful in case of suspicion of airborne particules such as sulphites rhinitis, underlying T cell-mediated hypersensitivity reactions.

Conflicts of Interest:

None

Dr. Demoly reports personal fees from ALK, Stallergenes Greer, IQVIA, Chiesi, AstraZeneca, ThermoFisherScientific, Ménarini, Bausch & Lomb, Mylan, ASIT Biotech, Novartis, Sanofi, Regeneron, outside the submitted work.

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Figure 1. SMBS positive (++) epidermo test in 24 hour-reading