

## OPTIMIZATION OF TREATMENT METHODS FOR CHRONIC ALLERGIC RHINITIS IN WORKERS PRODUCING GLASS-PLASTIC STRUCTURES

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### Abstract

An open non-comparative clinical study of the effectiveness of the drug «DOLPHIN» mineral and vegetable remedy in the treatment of allergic rhinitis in people working in conditions of increased professional risk was carried out. 138 employees of a fur factory suffering from allergic rhinitis were examined. According to the results of the study, a decrease in patients' complaints from the side of the nasal cavity (itching in the nose, nasal congestion, discharge from the nose, sneezing) was detected by 72%, from the organ of vision (itching of the eyes, discharge from the eyes) – by 64% on the 30-th day of using the drug. Rhinoscopy data on day 30 show a decrease in symptoms of allergic rhinitis by 58%. The use of «DOLPHIN» mineral and vegetable remedy led to an improvement in these rhinocytograms by 62 %. Good tolerance (8.3 points out of 10.0 possible) and efficacy (7,8 points out of 10.0 possible) of the drug were revealed according to patient estimates.

**Keywords:** allergic rhinitis, «DOLPHIN» mineral and vegetable remedy, elimination therapy.

### Introduction

Occupational allergic rhinitis is an inflammatory disease of the nasal mucosa manifested by intermittent or persistent symptoms such as nasal congestion, sneezing, rhinorrhea, and pruritus, as well as changes in nasal breathing and/or increased secretion resulting from exposure to allergens during work activities. The relationship of rhinitis to the occupational environment can vary. Two types are distinguished: occupational rhinitis proper, caused by allergens in the work environment, and rhinitis that already exists but is aggravated by exposure to occupational factors. [1,3,6].

According to experts' estimates, the prevalence of occupational allergies in the world ranges from 5 to 15% and continues to increase [2,4,5]. Information on the prevalence of occupational allergic rhinitis is highly controversial [7,10,11].

In Russia, about 9000 cases of allergic rhinitis (AR) are recorded annually, but according to Rospotrebnadzor, the number of newly diagnosed occupational AR is no more than twenty cases per year, indicating a clear hypodiagnosis of this disease. Therefore, the task of improving the diagnosis of occupational AR both at the preliminary stage and during the provision of specialized occupational pathological care becomes very urgent. [8,12].



Occupational hazards such as dust, vapors and gases, as well as organic substances in a dispersed state in the inhaled air have the most severe impact. [9, 10]. Allergic rhinitis of occupational origin is an immune hypersensitivity reaction that depends on humoral or cellular immunity. It involves a latency period necessary for sensitization to the allergen to form. After the initial reaction, symptoms may reappear with repeated contact with the allergen, even at concentrations that in other people do not cause any clinical manifestations with similar exposure. [9,10].

Allergic rhinitis often occurs in combination with other allergic diseases such as allergic conjunctivitis, atopic dermatitis and bronchial asthma. In Uzbekistan, allergic rhinitis affects between 20 and 50% of the population. [6].

There are two main approaches to the treatment of allergic rhinitis: the first is to relieve nasal symptoms and reduce their impact on the patient's general well-being; the second is to prevent the onset of bronchial asthma.[9]. Treatment tactics include both prevention of contact with allergens and the use of medications. [2,7].

Elimination or removal of significant allergens refers to etiopathogenetic approaches in the treatment of allergies. Complete elimination of contact with the allergen is often impossible, but even partial avoidance can significantly alleviate the symptoms of the disease. The use of medication elimination is also important. Salt preparations based on sea water help to maintain the normal state of the nasal mucosa, liquefy mucus and regulate its production by the bocaloid cells. These agents improve the work of the ciliated epithelium, promote the removal of dust, allergens and haptens, as well as reduce local inflammation and provide moisturization. [2,4,6].

### **Purpose of the study**

To reduce clinical manifestations of occupational chronic allergic rhinitis in workers involved in the production of fiberglass structures by using the elimination properties of the mineral and plant preparation “DOLPHIN”.

### **Materials and methods of research**

On the basis of ENT department of Samarkand regional multiprofile hospital, where 2 - Department of otorhinolaryngology of Samarkand State Medical University, we conducted an open non-comparative study of the effectiveness of mineral and plant remedy “DOLPHIN” in the therapy of occupational chronic allergic rhinitis. 138 male patients aged 25 to 55 years (mean age -  $41,4 \pm 8,2$  years) working in the shop of fiberglass constructions were examined. Chronic allergic rhinitis in these individuals was diagnosed by us at an outpatient appointment together with allergologists.

### **Inclusion criteria:**

Consent of workers involved in the production of fiberglass structures to participate in the study, age between 25 and 55 years, presence of rhinitis symptoms at the time of the first visit, and the patient's ability to comply with the protocol.

Exclusion criteria: age less than 25 and more than 55 years, presence of acute infectious diseases or exacerbations of chronic diseases, patient's inability to follow the protocol rules.



Patients with inflammatory changes in the clinical blood test or increased neutrophil count in the nasal discharge according to rhinocytogram were also excluded.

Criteria for inclusion in the study: consent of employees working with fiberglass structures to participate, age between 25 and 55 years, presence of rhinitis symptoms at the time of the first visit, and ability to follow protocol guidelines. Criteria for exclusion from the study: age less than 25 years or more than 55 years, presence of acute infectious disease or exacerbation of chronic disease, and inability to follow the protocol. In addition, patients with inflammatory changes in the clinical blood test or with an increased number of neutrophils in the nasal discharge according to rhinocytogram results were excluded.

Mineral and plant preparation "DOLPHIN" is a set of otorhinolaryngologic device for washing the nasal cavity. Complete with a soft irrigator bottle of 240 ml; endonasal nozzle and mineral-herbal remedy "DOLPHIN" (in sachets of 30 pcs.); in a cardboard box 1 set.

The device belongs to the products of individual use and can be used both in the conditions of therapeutic and preventive medical institutions and at home by adults and children from 12 years old.

When dissolving the mineral and plant remedy "DOLPHIN" a neutral solution is obtained, which is close in its composition to the physiological fluids of the human body.

The solution, prepared on the basis of sea salt, does not irritate mucous membranes, suitable for daily use, has anti-inflammatory, anti-edema, anti-allergic effect, stimulates reparative and immunomodulatory processes in the mucous membrane.

Nasal rinsing with the device "DOLPHIN" promotes mechanical removal of mucous-purulent contents of the nasal cavity.

The solution has a therapeutic effect on the nasal mucosa, reduces discharge and swelling of the nasal mucosa, promotes mechanical removal of allergens. Restores patency of the nasal passages, improves nasal breathing, the outflow of mucus and pus from the sinuses. Increases the effectiveness of local medications, reduces the period of use of vasoconstrictors and the course of respiratory diseases.

Rinsing of the nasal cavity with preparations was carried out 2 times a day according to the step-by-step instructions:

Patients were examined on the 1st (visit 1), 10th (visit 2) and 30th (visit 3) days after the start of application of the mineral and vegetable remedy "DOLPHIN". During each visit, complaints were collected and scored on a scale of 0 to 3 (main complaints: nasal itching, stuffiness, nasal discharge, sneezing, itchy eyes, eye discharge). Objective examination, temperature measurement, and instrumental rhinoscopy using a nasal mirror were also performed. The mucosal condition was assessed according to the following criteria: 1) color of mucosa (hyperemia - 1, pink - 0, pale - 1, livid - 2); 2) mucosal edema (none - 0, up to 1/2 lumen - 1, more than 1/2 lumen - 2); 3) nature of secretion (purulent - 2, transparent - 1, absent - 0); 4) amount of secretion (none/scrupulous - 0, moderate - 1, abundant - 2).

At the first visit, patient compliance was assessed and the patient was included in the protocol. At the second and third visits, the tolerability of the drug was determined and adverse events, including allergic reactions, were recorded. Tolerability and efficacy of the drug were evaluated by both the physician and the patient on a 10-point scale (0 points - poorly tolerated and ineffective, 10 points - perfectly tolerated and gives a good result)



Nasal secretion for rhinocytogram was collected at the first and third visits. Nasal sprays were not used 24 hours before material collection. To obtain a sample, a sterile swab was used and alternately inserted into the nasal passages. Nasal secretion was applied on a slide. The air-dried preparation was taken to the laboratory for microscopy of a smear stained by the Romanowsky-Giemsa method. The result was a description of the overall cytologic picture with counting of leukocytes, eosinophils, neutrophils, mesenteric epithelium, lymphocytes, macrophages, mucus, erythrocytes, yeast fungi and flora.

Rhinocytogram results were analyzed by the doctor using a point system: 1) eosinophils: absent - 0; up to 5% - 1; more than 5% - 2 points; 2) mucus: absent/+ - 0; ++ - +++ - 1; more than ++++ - 2 points; 3) bacteria: absent/single - 0; more than 2 in the field of view - 1 point.

Statistical processing of the data was carried out using Microsoft Office Excel 2007 program. Dynamic changes in rhinoscopy data, nasal and ocular symptoms, results of rhinocytograms, as well as evaluation of tolerability and efficacy of the drug from the patient's and doctor's point of view were taken into account during the analysis. Methods of analysis included calculation of mean values of indicators, calculation of percentages, standard deviation and determination of statistical significance of the results using Student's t-criterion.

### Results of the Study

First of all, a dynamic assessment of patients' complaints was performed. A decrease in the intensity of nasal complaints (itching, stuffiness, discharge, sneezing) was registered by 33% at visit 2 compared to visit 1 ( $p < 0.05$ ) and by 72% at visit 3 compared to visit 1 ( $p < 0.05$ ). Eye complaints (itching, discharge) decreased by 26% at visit 2 compared to visit 1 ( $p > 0.05$ ) and by 64% at visit 3 compared to visit 1 ( $p < 0.05$ ). This is due to the fact that under the action of the mineral and herbal remedy "DOLPHIN" there is elimination of allergens and improvement of mucociliary transport, which contributes to the etiopathogenetic treatment.

When evaluating rhinoscopy data, a decrease in the severity of objective signs of allergic rhinitis was noted: at visit 2, there was a decrease in the pallor and lividity of the mucosa, as well as a decrease in edema and discharge in the nasal cavity by 18% ( $p > 0.05$ ), and at visit 3, this decreases amounted to 58% compared to visit 1 ( $p < 0.05$ ).

Rhinocytogram analysis showed a significant ( $p < 0.05$ ) reduction in signs of allergic rhinitis: the amount of mucus and eosinophils in the smear decreased by 62% at visit 3 compared to the pre-study values.

The above data are presented in the chart in Appendix 1.

The average tolerability score of the drug is 8.3 according to the patients and 8.7 according to the physician out of a possible 10. The efficacy of the drug, according to subjective assessment, is 7.8 points from the patients and 8.1 points from the physician out of a possible 10.

During the study no adverse events or allergic reactions to the mineral and plant remedy "DOLPHIN" were recorded in any patient.

### Conclusions

According to the results of the study there was a significant reduction of the patients' complaints about the condition of the nasal cavity by 72% and about the organs of vision by 64% after 30 days of using the mineral and vegetable remedy "DOLPHIN".



Rhinoscopy performed at the beginning and at the end of the study showed a reliable reduction of allergic rhinitis symptoms by 58%.

There was also an objective improvement in rhinocytogram parameters by 62% after 30 days of using the nasal rinse.

According to patient evaluations, the product demonstrated good tolerability (8.3 points out of 10) and efficacy by subjective evaluation (7.8 points out of 10).

Thus, the mineral and plant remedy “DOLPHIN” is recommended as an elimination therapy for fiberglass construction workers suffering from allergic rhinitis and regularly exposed to chemical particles in the environment.

## References

1. Измеров, Н.Ф. Профессиональная патология: национальное руководство / Н.Ф. Измеров. – М.: ГОЭТАР-Медиа, 2011. – 784 с.
2. Каркачева Е.С., Накатис Я.А., Рымша М.А. Новые подходы к лечению аллергического ринита у лиц, работающих в условиях повышенного профессионального риска // Экспериментальная и клиническая оториноларингология, № 2 (05) 2021. Стр. 42-45
3. Мухин, Н.А. Профессиональные болезни / Н.А. Мухин, С.А. Бабанов, В.В Косарев. – М.: ГЭОТАР-Медиа, 2013. – 496 с.
4. Профессиональные болезни верхних дыхательных путей и уха: рук-во для врачей / под ред. В. И. Бабияка и Я. А. Накатиса. – СПб.: Гиппократ, 2009. – 696 с.
5. Федеральные клинические рекомендации: аллергический ринит / Н. И. Ильина, О. М. Курбачева, К. С. Павлова [и др.] // Российский аллергологический журнал. – 2017. – № 2. – С. 46–54.
6. Халимов Ю.Ш., Вологжанин Д.А., Г.А., и др. Профессиональный аллергический ринит (этиология, патогенез, клиника, диагностика, лечение, профилактика, экспертиза трудоспособности) // Вестник Российской Военно - Медицинской Академии, 2 (58) – 2017, стр.232-239
7. Combined effect of smoking and occupational exposure to dusts, gases or fumes on the incidence of COPD / P. Pallasaho, A. Kainu, A. Sovijarvi [et al.] // COPD. – 2014. – Vol. 11 (1). – P. 88–95.
8. EAACI position paper on occupational rhinitis / G. Moscato, O. Vandenplas, R. G. Van Wijk [et al.] // Respiratory Research. – 2009. – Vol. 10 (1). – P. 10–16.
9. Nasretdinova M. T. Application of vestibular tests in patients with systemic vertigo //Otorhinolaryngology. Eastern Europe. - 2019. - Т. 9. - №. 1. - С. 8-13.
- 10.Омонова М., Нормурадов Н., Насретдинова М. Т. Хронические полипозные риносинуситы //Science and Education. – 2023. – Т. 4. – №. 5. – С. 504-510
11. Slavin R.G. Update on occupational rhinitis and asthma // Allergy Asthma Proc. — 2010. — №31 (6). — P. 437-443
12. Shusterman D. Occupational irritant and allergic rhinitis // Current Allergy and Asthma Reports. – 2014. – Vol. 14 (4). – P. 425.

