

# Medical Treatment Of Chronic Rhinitis

A Al-Shehri

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## Abstract

In most cases chronic rhinitis can be a symptom of nasal sinus affection, allergic, immunologic or systemic disease as well as a result of toxic effects. Others are adenoids, septum deviation, foreign bodies and abuse of nasal drops. Besides of non-specific treatment pharmacological therapy aims at the treatment of the underlying disease. Possible complications of the chronic rhinitis are the atrophic rhinitis, sinusitis, chronic bronchitis as well as foetor and disturbance of olfactory perception. Therefore there is need for a causal therapy to avoid exacerbation. This essay gives a survey of the pharmacological possibilities in the treatment of the chronic rhinitis.

## INTRODUCTION

The chronic rhinitis is a specific or non-specific disease of the nasal mucosa including the nasal sinus. The diagnosis is made if symptoms last more than 10 days. As a rule, the clinical appearance of the chronic rhinitis is not specific, but shows symptoms of bacterial, viral or fungal infection of the nasal sinus, symptoms of allergic or immunologic or systemic diseases. Disturbances of the hormonal status, e.g. in pregnancy or because of the intake of contraceptive agents, adenoids, hyperplasia of the nasal conchae, nasal polyps, tumors, septum deviation and other malformations of the nose, foreign bodies and abuse of nose drops can lead to a chronic rhinitis as well. Chemical and physical toxic agents or extrem dry air because of defects of air conditioner or the use of too many personal computers in one room are further reasons. [1] In some cases the chronic rhinitis is a symptom of the sick building syndrome. [2]

Possible complications of the chronic rhinitis are the atrophic rhinitis, sinusitis, chronic bronchitis as well as foetor and disturbance of olfactory perception. Therefore there is need for a causal therapy to avoid exacerbation. This essay gives a survey of the pharmacological possibilities in the treatment of the chronic rhinitis.

## DIAGNOSTIC MEASURES

Basic diagnostic steps should include general and specific, especially allergological history of actual and past illness, clinical examination of the ear, nose and throat and the anterior and posterior rhinoscopy as well. Important complementary tests are skin tests to identify IgE-mediated

allergic diseases [5,16], laboratory tests, nasal, conjunctival and oral provocation tests including investigations of occupational environment with trials concerning deficiency and exposition of irritative agents.

Functional diagnostic measures of the nose as well as bacterial, fungal, radiologic, endoscopic (e.g. contact endoscopy of the nasal mucosa [1]), sonographic investigations of the nasal sinus and the pharynx and larynx and additional laboratory tests are additional diagnostic tools that lead to a correct diagnosis. In case of negative results further gynecological, endocrinological, toxic, internal and occupational studies are necessary.

## GENERAL PHARMACOLOGICAL TREATMENT OF THE CHRONIC RHINITIS

Local treatment. In case of acute exacerbation with extreme swelling of the nasal mucosa alpha-sympathomimetic nose drops should be applied. Nose drops, sprays or unguents without alpha-sympatomimetics, e.g. Coldastop® (contraindication: asthma bronchiale), Kamillan supra® or Soledum® (contraindication: allergy against chamomilla), Euphorbium nose drops are used for long-term treatment.

There are contraindications for phytopharmacological rhinologica containing eucalyptus, spruce or pine oil - e.g. Pumilen®-N - in the treatment of infants or in case of asthma bronchiale and pertussis as well as the local application of peppermint and thymian oil to the nasal mucosa of younger children.

Long-term treatment. For the care of the nasal mucosa in

chronic rhinitis nursing nose salves, e.g. panthenol, or emulsions should be applied.

Secretolysis. To approve secretolysis, mucolytic agents, e.g. acetylcystein in a low dosage of 2x 100-200 mg/die, ambroxol 3 x 30 mg/die, kalium bichromicum D30 glob. are indicated. Oral applications of rhinologic phytopharmaca like myrtol and may be useful.

Supporting drugs are homeopathic complex preparations as e.g. Traumeel® tablets or drops, Euphorbium comp. drops® and spray as well. Other proved methods are the nasal irrigation, aerosol therapy with solution of Emser Salz or panthenol. For optimal resorption at the nasal mucosa the particles should achieve a size of at least 10 µm, as smaller particles precipitate in the lower airways and thus have no sufficient effect. With inhalation therapy high drug concentrations on the mucosa can be achieved. [17] There is evidence that there is not only a secretolytic effect, these methods may also reduce the concentration of inflammatory mediators as e.g. histamine and leucotriens. [14]

Under constitutional aspects homeopathic drugs as Euphorbium D3, D4, Galphimia D4, D6, D12, Kalium bichromicum D3-6, Luffa D3-12, Calcium carbonicum, Hepar sulfuris, Sulfur, Sulfur jodatum, Natrium muriaticum, Graphites, Pulsatilla, Silicea, Sticta pulmonaria are used. [12]

In a general practice an unguent containing *Belladonna planta tota* 1% + Unguentum apis Weleda® aa 25,0, locally applied as a thin film to the paranasal skin several times per day, often shows surprising effects, provided that the rhinitis is due to a chronic or recurrent sinusitis (personal information of the general practitioner).

Antibiotics. Putride nasal secretion should be treated with a broad-spectrum antibiotic, e.g. amoxicillin, or with cephalosporine. In case of resistance, microbial sensitivity tests should be performed to give the correct drugs, in very special cases for a period of 3-4 weeks.

Sympathomimetics. These substances - Xylometazolin (Otriven®), Naphazolin (Privin®), Tetryzolin (Tyzine®), Oxymetazolin - are inhibitors of the alpha-adrenergic receptors of the nasal vessels and therefore suppress the swelling of the nasal mucosa via vasoconstriction. The application, however, should be of short-term, as even few applications can cause an intense swelling of the nasal mucosa because of interstitial edema, calling the patient for a higher dosage of the applied nose drops (rebound [16]). This problem concerns especially elderly patients, having a more

thin and dry nasal mucosa. Long-term use of nasal drops may lead to nose drop dependency. Because of central side effects special care has to be taken of young children up to the age of 2 years, overdosage may lead to severe alteration of consciousness and respiratory depression.

Contraindications of sympathomimetics are circulatory disorders and urinary retention.

Capsaicin. This extraction of chilies reduces neurogenic inflammatory reactions via hyposensitization of the sensorimotoric nerves. Indication is the vasomotor rhinitis. [4, 11]

Antihistamines. In case of allergic chronic rhinitis and/or nasal hyperreactivity antihistamines are used locally and orally. These substances may inhibit reversibly specific tissue receptors (H1-receptor inhibitor).

Most of the antihistamines have contraindications, e.g. disturbed micturition with residual urine in case for e.g. prostata hyperplasia, angle-closure glaucoma, disturbance of the liver function (e.g. Terfenadin), combination with macrolid antibiotics (e.g. Terfenadin, Astemizol) and restriction concerning the age of the patient (e.g. Cetirizin, Loratadin: >2 years, Azelastin-HCL: >6 years) as well as the application during pregnancy and lactation period.

The most frequent side effects are those of the vegetative nervous system as headache, nausea, queasiness, dryness of the mouth, gastrointestinal effects, disturbance of micturition, visual disorders and skin reactions. There has to be special attention to side effects on the central nervous system like excitation or sedation, as reactivity and concentration may be significantly reduced. Those patients, who drive a car or who are working on rotating machines or in special dangerous areas, should not take these substances. Antihistamines of the new generation have an effect of 24 hours and clearly show less side effects on the central nervous system. Nevertheless individual adverse reactions are possible, so that the first medication intake should e.g. be at a weekend.

Cromoglicine acid. This antiallergic drug inhibits the degranulation of sensitized mastcells and the release of inflammatory mediators. [4]. Local application shows no systemic side effects. Nasal application has a bioavailability of 7 %. The therapeutic effect only depends on the concentration in the effector organ. Dosage: 4x1 spray into each nostril with no restriction to age. The nasal application of cromoglycine powder (3x20 mg as capsule) can cause irritation of the nasal mucosa. For a better result the

treatment with cromoglicine acid can be combined with a low dosage of antihistamines, locally applied as nose drops before administration of the cromoglycine spray, but not longer than 2-3 days. Cromoglycine acid has no effect in the acute status of rhinitis. The cumulative effective dose is achieved within 2-3 weeks of 3-4 applications daily.

Ipratropiumbromid. This substance is an analogue to atropine. It is used for the treatment of serous rhinitis. Side effects are slight dryness of the nasal mucosa and incrustation, but there are no systemic anticholinergic side effects like atropine. [7,16]

Topic corticoids. In the treatment of allergic nasal obstruction and different forms of chronic rhinitis topical corticoids are first to choose. Application before exposition to allergens cause an inhibition of release of mast cell mediators and inflammatory cells. Nasal corticoids have no or only few systemic effects and reduce itching, sneezing and mucosal swelling. Possible side effects are a slight burning of the mucosa, in some cases epistaxis, dryness of the mucosa and pharyngeal irritation. Topic corticoids should not be applied in case of fungal or bacterial infections of the airways and in lung tuberculosis.

### PHARMACOTHERAPY OF SPECIFIC DISEASES

Allergic rhinitis. The allergic rhinitis is the most frequent causative agent of a chronic rhinitis (10-15 %). [10]

Characteristic symptoms concerning the seasonal chronic rhinitis are allergic reactions to grains, wheat or tree pollen and with symptoms occurring only during the main flowering time. The patients complain sneezing, itching, watery secretion and often conjunctivitis. In case of perennial allergic rhinitis there often is an allergy against dust mites, moulds, bed feathers or animal hairs. Also occupational allergens should be concerned to cause allergies, so as dusts, aerosols, steam, enzymes, animal epithelium, coloring agents, fibers, metals etc.

The chemical induced rhinitis is an allergic disease, in which biogenic amines, benzoic acids and tyramine, contained e.g. in beer, wine and chocolate, can irritate directly the receptors of the nasal mucosa. [11]

The pharmacotherapy of the allergic rhinitis consists in local and oral application of antihistamines, e.g. DNCG spray, Lisino® 10 mg/die, and in the application of topic corticoids, e.g. Topinasal®, Beconase®, Flutide®. Alternatively there is a treatment with Luffa D3-12 4 weeks before and during the whole pollen season.

Nasal hyperreactivity (NH, rhinitis vasomotorica, non-allergic non-infectious rhinitis). The pathogenesis is not yet clear, and a glandular and vascular hyperreactivity because of nervous disorder is proposed. [16] Attacks of watery secretion without symptoms of cold or sneezing are typical symptoms. Differential diagnosis should delimit the NH especially from allergic rhinitis, but also from chronic sinusitis, cysts of the maxillary sinus and rhinoliquorrhea. In most cases the NH is essential, but the NH may be a side effect of medical treatment, toxic irritation, reflex reactions e.g. to spices, smell, effort, chilliness and heat, hormonal change and infection, too.

The medical treatment of the NH concerns the basic illness. NH caused by endocrinologic illness cannot be treated by the ENT. Topical corticoids have a broad effect and may be successful.

The reflectoric NH can also be treated with oral antihistamines, dinatriumcromoglycin acid or capsaicin. Treatment of essential NH or NH of unknown origin contains dinatriumcromoglycin acid, topic corticoids and antihistamines. [11]

Drug induced rhinitis. The drug-induced rhinitis is caused by side effects of topical or oral substances, like topical sympathomimetics as well as antihypertensive drugs, e.g. clonidine, guanethidine, propranolol, prazosin, hydralazin, hydrochlorothiazid and estrogen in endocrine and contraceptive therapy. [16]

Atrophic rhinitis. The ozaena (*coryza foetida*) is a progressive sclerosing atrophy of the nasal mucosa and the nasal conchae, concerning especially the elderly. Causal agents are: too wide nostrils, substantial loss of the nasal mucosa after injury or surgery, chronic rhinitis and/or sinusitis induced by bacterial infection or chemical or physical irritation, chronic abuse of nose drops, radiation sequela, and infection with gram-negative bacteriums, *Rhinosporidium Seeberi*, *Histoplasma capsulatum*, *Candida albicans*, *Aspergillus*, *Mucorales*, *Phialophora*, *Leishmaniosis*, *Tuberculosis* and *Myobacterium leprae*. In some cases there is a constitutional ozaena. Symptoms are: desiccation of the nasal mucosa, incrustation, inflammation and sticky mucus, foetor and disturbance of the olfactory perception.

The medical treatment of ozaena is: physical treatment with inhalation and lavage, secretolysis e.g. with Tacholiquin, application of nose salves (*Nisita*®, *Bepanthen*® =

panthenol, Siozwo®) and a specific antibiotic therapy appropriate to the results of smear tests. There may be a therapeutic trial with hydergin or reserpin in the dosage of 2x0,25 mg/die p.o. for 4 days, followed by 4x0,25 mg/die for 2-3 months. There is a lifelong need for intensive care of the mucosa.

Adenoids. In most cases chronic inflammation e.g. with *Streptococcus A*, *Haemophilus influenzae* and *Streptococcus pneumoniae* as well as viral infections cause a hyperplasia of the adenoids. Symptoms are nasal obstruction with putrid coryza and stasis in the ENT-region with affection of the middle ear, the nasal sinus and descending infections of the sinubronchial system. Mostly children are involved, often showing a reduced state of general health and development disorder. [8]

The medical treatment concerns concomitant symptoms. As a short-term treatment nose drops, e.g. Nasivin® or Otriven® 0,5 %, are indicated. Acetylcystein in a dosage corresponding to the age of the patient as well as inhalation of Emser Salz and a solution of panthenol promote secretolysis and calm down the irritated mucosa. Immunostimulating drugs are e.g. Lymphozil K®, Esberitox®, Tonsilgon®, that as a side effect may reduce the swelling of the mucosa.

Septumdeviation and other abnormalities of the nasal structure. Deformity of the nasal structure are first of all not a cosmetic problem, but often cause an inhibition of nasal breathing and disturbance of smelling, stasis of the nasal sinus and chronic inflammation of the nasal mucosa. There is no need for symptomatic therapy of the chronic rhinitis with nose drops, as there is only the danger of nose drops abuse. Nose drops should be applied only for a very short period in cases of heavy complaints.

Nose drops abuse. Frequent use of sympathomimetics can lead to nasal drops abuse. Within the medical induced rhinitis the edema of the nasal mucosa causes obstruction of the nasal airways anew and asks for premature use of the drug. Often patients take nose drops several times daily over years. Therapy is difficult, stopping nasal decongestants and treat the patient with inhalation and nursing nose salves.

Sinusitis maxillaris and frontalis, immune deficiency diseases, mucoviscidosis, tuberculosis, nasal polyps, tumors as well as endocrinologic diseases can cause a chronic rhinitis. In all these cases the chronic rhinitis will only be treated, unless the treatment of the original illness is not

successful.

## DISCUSSION

It is important to know the exact origin of the chronic rhinitis before starting therapy. Beside general measures as secretolysis and inhalation, that calm down the irritated nasal mucosa, the treatment of the basic illness is essential.

Especially the elderly often show symptoms of a chronic rhinitis. [16] The physiological process of aging leads to atrophic nasal mucosa combined with recession of the collagen fibers and loss of elastic fibers in the skin, resulting in the change of the outer form of the nose und a higher nasal air resistance. Dry mucosa and a higher viscosity of the mucos promote a chronic rhinitis. Some medical drugs can lead to chronic rhinitis, especially in the elderly, e.g. antihypertensive agents or estrogene. In case of the need of antihistamines, those of the first generation should be applied with caution because of their effects on the central nervous system. They should not be combined with other central sedative agents as barbiturates or benzodiazepine. [16] Prolongation of the QT-interval was seen especially in antihistamines of the second generation as Terfenadin and Astemizol. There are some cases of cardiac side effects, so that these substances should not be applied in patients with arrhythmia, heart insufficiency and coronary disease as well as those with disturbed liver function. Because of the retardation of elimination in the elderly patient antihistamines should principally - even in healthy ones - be given in the lowest dosage. [16] A good alternative is the regulary application of topical cromoglycine acied, a drug with nearly no side effects.

As a rule it is better to prevent allergic rhinitis than to treat it. Beside medical treatment we can do also hyposensitization of patients and instruct the patient to avoid exposure to allergens like pollen. Nevertheless a medical treatment often has to be done at least for a limited time - as to take care of the occupational and social capacity of the patient, especially at the times of high pollen exposition the allergic rhinitis leads to a severe impairment of the general condition. Nasal application of cromoglycine acid as well as topic nasal corticoids and ipratropiumbromid have only few side effects with a therapeutical effect of long duration.

Because of the rebound effect sympathomimetics should be restricted to short-term application. A nose drop dependency, caused by long-term application, is difficult to treat.

As the chronic rhinitis is a strainful disease compromising social life, there is a great patient's desire of change. Therapy should aim at an intensive treatment and a flexible handling of the therapy concerning changing symptoms of the disease.

### CORRESPONDENCE TO

Dr. A. Wegener, Buschweg 39a, D-53229 Bonn, Germany e-mail: angelica.wegener@gmx.net

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**Author Information**

**Ali Maeed Al-Shehri**

Consultant Doctor of E.N.T. Department, College of Medicine and Medical Science, King Khalid University