

Vestn Otorinolaringol. 2003;(4):42-4.

[Halotherapy in combined non-puncture therapy of patients with acute purulent maxillary sinusitis]

[Article in Russian]

Grigor'eva NV.

Halotherapy was applied for non-puncture treatment of 45 patients with acute purulent maxillary sinusitis. The response was evaluated by changes in clinico-immunological, cytological, x-ray and bacteriological parameters. Halotherapy was found effective in the treatment of acute purulent maxillary sinusitis without puncture.

PMID: 13677023 [PubMed - indexed for MEDLINE]

Vopr Kurortol Fizioter Lech Fiz Kult. 2001 Jan-Feb;(1):26-7.

[Efficacy of therapeutic use of ultrasound and sinusoidal modulated currents combed with halotherapy in patient with occupational toxic-dust bronchitis]

[Article in Russian]

Roslaiia NA, Likhacheva EI, Shchekoldin PI.

Immunological and cardiorespiratory characteristics were studied in 88 alloy industry workers with occupational toxic-dust bronchitis who received the following therapy: sinusoidal modulated currents (SMC), ultrasound (US) on the chest, halotherapy (HT) (52 patients, group 1); SMC + HT (10 patients, group 2); US + HT (15 patients, group 3); HT (11 patients, group 4). The patients did also therapeutic exercise and were massaged (chest). It was found that device physiotherapy (SMC, US) in combination with HT raise the treatment efficacy to 86.5%. This combined treatment is recommended both for treatment and prevention of obstructive syndrome in toxic-dust bronchitis.

PMID: 11530404 [PubMed - indexed for MEDLINE]

Klin Med (Mosk). 2000;78(12):37-40.

[Effects of halotherapy on free radical oxidation in patients with chronic bronchitis]

[Article in Russian]

Farkhutdinov UR, Abdrakhmanova LM, Farkhutdinov RR.

Registration of luminol-dependent chemoluminescence of blood cells and iron-induced chemoluminescence of the serum was used to study generation of active oxygen forms and lipid peroxidation in patients with chronic bronchitis (CB). 49 patients with lingering CB showed inhibition of blood cell function and enhancement of lipid peroxidation. The addition of halotherapy to combined treatment of these patients promoted correction of the disorders and improvement of CB course.

Publication Types:
" Clinical Trial

PMID: 11210350 [PubMed - indexed for MEDLINE]

[Effectiveness of halotherapy of chronic bronchitis patients]

[Article in Russian]

Abdrakhmanova LM, Farkhutdinov UR, Farkhutdinov RR.

The chemoluminescence test in 49 patients with lingering inflammatory chronic bronchitis has revealed inhibition of generation of active oxygen forms in the whole blood, intensification of lipid peroxidation in the serum, depression of local immunity. Administration of halotherapy to the above patients results in correction of disturbances of free-radical oxidation, improves local immunity and clinical course of the disease.

PMID: 11197648 [PubMed - indexed for MEDLINE]

Vopr Kurortol Fizioter Lech Fiz Kult. 2000 Jan-Feb;(1):21-4.

[The scientific validation and outlook for the practical use of halo-aerosol therapy]

[Article in Russian]

Chervinskaia AV.

The paper describes a new medical technique--halo-aerosol therapy, the main acting factor of which is dry highly dispersed aerosol of sodium chloride in natural concentration. Halo-aerosol therapy represents a new trend in aerosol medicine. It includes two methods: halotherapy and halo-inhalation. Biophysical and pathophysiological foundations of the new method, how it can be realized are outlined. Clinical reasons are provided for application of halo-aerosol therapy for prevention, treatment and rehabilitation of patients with respiratory diseases. Characteristics and differences of the two halo-aerosol therapy variants are analysed.

Publication Types:
" Review

PMID: 11094875 [PubMed - indexed for MEDLINE]

Voen Med Zh. 1999 Jun;320(6):34-7, 96.

[Halotherapy in the combined treatment of chronic bronchitis patients]

[Article in Russian]

Maev EZ, Vinogradov NV.

Halotherapy proved to be a highly effective method in a complex sanatorium treatment of patients with chronic bronchitis. Its use promotes more rapid liquidation of clinical manifestations of disease, improves indices of vent function of lungs, especially those values that characterize bronchial conduction (volume of forced exhalations per second, index Tiffno), increases tolerance to physical load, normalizes indices of reduced immunity and leads to increasing the effectiveness of patient treatment in sanatorium.

PMID: 10439712 [PubMed - indexed for MEDLINE]

Vopr Kurortol Fizioter Lech Fiz Kult. 1997 Jul-Aug;(4):19-21.

[The use of an artificial microclimate chamber in the treatment of patients with chronic obstructive lung diseases]

[Article in Russian]

Chernenkov RA, Chernenkova EA, Zhukov GV.

Halotherapy was used for sanatorium rehabilitation in 29 patients with chronic obstructive pulmonary diseases (chronic bronchitis and asthma). Significant positive effects of this method resulted in the improvement of the flow-volume parameters curve of lung function and in hypotensive effects on blood pressure. Halotherapy is recommended for use in patients suffering from chronic obstructive pulmonary diseases with hypertension or coronary heart disease.

PMID: 9424823 [PubMed - indexed for MEDLINE]

J Aerosol Med. 1995 Fall;8(3):221-32.

Halotherapy for treatment of respiratory diseases.

Chervinskaya AV, Zilber NA.

Saint-Petersburg Pavlov National Medical University, Russia.

This work elucidates the questions upon the development of a new drug-free method of a respiratory diseases treatment. Halotherapy (HT)--is mode of treatment in a controlled air medium which simulates a natural salt cave microclimate. The main curative factor is dry sodium chloride aerosol with particles of 2 to 5 mkm in size. Particles density (0.5-9 mg/m³) varies with the type of the disease. Other factors are comfortable temperature- humidity regime, the hypobacterial and allergen-free air environment saturated with aeroions. The effect of HT was evaluated in 124 patients (pts) with various types of respiratory diseases. The control group of 15 pts received placebo. HT course consisted of 10-20 daily procedures of 1 hour. HT resulted in improvements of clinical state in the most of patients. The positive dynamics of flow-volume loop parameters and decrease of bronchial resistance measured by bodyplethysmography were observed. The changes in control group parameters after HT were not statistically significant. The specificity of this method is the low concentration and gradual administration of dry sodium chloride aerosol. Data on healing mechanisms of a specific airdispersive environment of sodium chloride while while treatment the respiratory diseases are discussed.

PMID: 10161255 [PubMed - indexed for MEDLINE]

Ter Arkh. 1996;68(8):24-8.

[Bronchial hyperreactivity to the inhalation of hypo- and hyperosmolar aerosols and its correction by halotherapy]

[Article in Russian]

Gorbenko PP, Adamova IV, Sinitsyna TM.

18 bronchial asthma (BA) patients (12 with mild and 6 with moderate disease) were examined before and after halotherapy (HT) for airways reactivity using provocative tests with ultrasonic inhalations of purified water (UIPW) and hypertonic salt solution (HSS). Bronchial hyperreactivity (BHR) to UIPW and HSS before treatment occurred in 13 and 11 patients (72 and 69%, respectively). HT reduced BHR in 2/3 and 1/2 of the patients, respectively. In the rest patients BHR was unchanged or increased, being so to UIPW only in patients with atopic asthma in attenuating exacerbation. Clinical efficacy of HT and initial BHR to UIPW correlated ($r = 0.56$; $p < 0.05$). No correlation was found between HT efficacy and initial BHR to HSS.

PMID: 9019826 [PubMed - indexed for MEDLINE]

Vopr Kurortol Fizioter Lech Fiz Kult. 1995 Jan-Feb;(1):11-5.

[The use of halotherapy for the rehabilitation of patients with acute bronchitis and a protracted and recurrent course]

[Article in Russian]

Borisenko LV, Chervinskaia AV, Stepanova NG, Luk'ian VS, Goncharova VA, Pokhodzei IV, Krivitskaia VZ, Vishniakova LA, Pokhaznikova MA, Faustova ME, et al.

Halotherapy was used for rehabilitation in 25 patients with acute bronchitis of long-standing and recurrent types. The main therapeutic action was ensured by aerodispersed medium saturated with dry highly dispersed sodium chloride aerosol, the required mass concentration being maintained in the range of 1 to 5 mg/m³. Therapy efficacy was controlled through assessment of clinical, functional, immunological and microbiological findings. Metabolic activity values were taken into consideration as well. Positive dynamics of the function indices in the clinical picture resulted from elimination of pathogenic agents, control of slowly running inflammatory lesions and stimulation of some immune system factors. Favourable changes in metabolic activity were present: normalization of serotonin excretion, marked decrease of unbalance in lipid peroxidation-antioxidant system.

PMID: 7785211 [PubMed - indexed for MEDLINE]

13: Vopr Kurortol Fizioter Lech Fiz Kult 1994 Jul-Aug;(4):34-5

[The efficacy of speleotherapy in atopic dermatitis in children]

[Article in Russian]

Puryshv EA.

After proper clinical and immunological examinations 112 children with atopic dermatitis underwent immunocorrective speleotherapy in a chamber with artificial microclimate created with the use of sodium chloride spraying. During the treatment positive trends were observed in the patients' dermatological status and immune homeostasis. A complete 6-24-month response was reported in 58%, partial in 20%, no response in 6.9% of patients. The method is recommended for treatment of atopic dermatitis.

PMID: 7846884 [PubMed - indexed for MEDLINE]

SALINE TREATMENTS FOR UPPER AND LOWER RESPIRATORY TRACT DISORDERS



Inhalation of hypertonic saline aerosol enhances mucociliary clearance in asthmatic and healthy subjects

E. Daviskas, S.D. Anderson, I. Gonda, S. Eberl, S. Meikle, J.P. Seale, and G. Bautovich

Eur Respir J 1996; 9: 725-732

Nebulised hypertonic saline for cystic fibrosis (Cochrane Review)

Wark PAB, McDonald V

ABSTRACT

A substantive amendment to this systematic review was last made on 01 February 2000. Cochrane reviews are regularly checked and updated if necessary.

Background: The lung disease in cystic fibrosis is characterized by impaired mucociliary clearance, recurrent bronchial infection and airway inflammation. Hypertonic saline has been shown to enhance mucociliary clearance in-vitro and this may act to lessen the destructive inflammatory process in the airways.

Objectives: To determine if nebulised hypertonic saline treatment improved lung function, exercise tolerance, quality of life and decreased the incidence of exacerbations of respiratory infections in patients with cystic fibrosis.

Search strategy: Studies were identified from the Cochrane Cystic Fibrosis and Genetic Disorders Group trials register. Titles and abstracts were reviewed to identify all controlled trials. Reviewed articles and bibliographies identified from this process were surveyed for additional citations & RCTs. Identification of unpublished work was obtained from abstract books from the three major Cystic Fibrosis conferences (International Cystic Fibrosis Conference, The European Cystic Fibrosis Conference and the North American Cystic Fibrosis Conference). Trial authors were contacted for additional information when only abstracts were available to review.

Date of the most recent search of the Group's specialized register: February 2000.

Selection criteria: All controlled trials that assessed the effect of hypertonic saline compared to placebo or other mucolytic therapy, for any duration or dose regimen in subjects with cystic fibrosis of any age or severity were reviewed. Studies in languages other than English were included.

Data collection and analysis: All identified trials were independently reviewed by both reviewers & all data collected. Trial quality was scored by the Cochrane assessment of allocation concealment & the Jadad scale of methodological quality.

Main results: Twelve controlled trials of hypertonic saline were identified. Seven trials met the inclusion criteria; these involved 143 subjects with an age range of 6 to 46 years. Of these, six were published studies and one in abstract form. The durations of the trials were limited to immediate effects on mucociliary clearance to a maximum of three weeks.

In two studies, involving thirty five subjects, a score for the feeling of cleared chest was made using visual analogue scales. This analysis showed a weighted mean difference of -0.98 (95% Confidence Interval -1.6, -0.34), favouring hypertonic saline over isotonic saline.

In two trials with 22 subjects hypertonic saline improved mucociliary clearance as measured by isotope clearance from the lungs in 90 minutes demonstrating a weighted mean difference of -11.3 (95% CI -18.6, -4.0), and as area under the clearance time curve; weighted mean difference of -212 (95%CI -272, -152), also favouring hypertonic saline over isotonic saline.

Lung function as measured by improvement in FEV1 was observed in one study of 27 subjects. The percentage increase in FEV1 at two weeks increased by a mean 15.0% with hypertonic saline and 2.8% with isotonic saline (p=0.004).

Adverse events were adequately described in only one trial and none were serious.

Reviewers' conclusions: Nebulised hypertonic saline improves mucociliary clearance immediately after administration which may have a longer term beneficial effect in cystic fibrosis.

The maximum time data were recorded for was only three weeks. Most of the patients had mild to moderate lung disease and the effect on severe lung disease remains unclear.

Further studies of hypertonic saline should be carried out to determine the effect on pulmonary function tests, quality of life, frequency of exacerbations of respiratory disease and efficacy comparisons with nebulised deoxyribonuclease, with larger numbers and for longer duration.

At this stage there is insufficient evidence to support the use of hypertonic saline in routine treatment for patients with cystic fibrosis.

Citation: Wark PAB, McDonald V. Nebulised hypertonic saline for cystic fibrosis (Cochrane Review). In: The Cochrane Library, 1, 2001. Oxford: Update Software.

MeSH: Administration, Inhalation; Cystic Fibrosis/*drug therapy; Human; Nebulizers and Vaporizers; Saline Solution, Hypertonic/administration & dosage/*therapeutic

This is an abstract of a regularly updated, systematic review prepared and maintained by the Cochrane Collaboration. The full text of the review is available in The Cochrane Library (ISSN 1464-780X).
File Reference: ab001506-20011
Inhalation Aerosols
Reprinted from Respiratory Care (Respir Care 1993;38:1196-1200)

Efficacy of daily hypertonic saline nasal irrigation among patients with sinusitis: a randomized controlled trial.

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Objectives: To test whether daily hypertonic saline nasal irrigation improves sinus symptoms and quality of life and decreases medication use in adult subjects with a history of sinusitis.

Study design: Randomized controlled trial. Experimental subjects used nasal irrigation daily for 6 months.

Population: Seventy-six subjects from primary care (n=70) and otolaryngology (n=6) clinics with histories of frequent sinusitis were randomized to experimental (n=52) and control (n=24) groups.

Outcomes measured: Primary outcome measures included the Medical Outcomes Survey Short Form (SF-12), the Rhinosinusitis Disability Index (RSDI), and a Single-Item Sinus-Symptom Severity Assessment (SIA); all 3 were completed at baseline, 1.5, 3, and 6 months. Secondary outcomes included daily assessment of compliance and biweekly assessment of symptoms and medication use. At 6 months, subjects reported on side effects, satisfaction with nasal irrigation, and the percentage of change in their sinus-related quality of life.

Results: No significant baseline differences existed between the 2 groups. Sixty-nine subjects (90.8%) completed the study. Compliance averaged 87%. Experimental group RSDI scores improved from 58.4 +/- 2.0 to 72.8 +/- 2.2 (P < or = .05) compared with those of the control group (from 59.6 +/- 3.0 to 60.4 +/- 1.1); experimental group SIA scores improved from 3.9 +/- 0.1 to 2.4 +/- 0.1 (P < or = .05) compared with those of the control group (from 4.08 +/- 0.15 to 4.07 +/- 0.27). The number needed to treat to achieve 10% improvement on RSDI at 6 months was 2.0. Experimental subjects reported fewer 2-week periods with sinus-related symptoms (P < .05), used less antibiotics (P < .05), and used less nasal spray (P = .06). On the exit questionnaire 93% of experimental subjects reported overall improvement of sinus-related quality of life, and none reported worsening (P < .001); on average, experimental subjects reported 57 +/- 4.5% improvement. Side effects were minor and infrequent. Satisfaction was high. We found no statistically significant improvement on the SF-12.

Conclusions: Daily hypertonic saline nasal irrigation improves sinus-related quality of life, decreases symptoms, and decreases medication use in patients with frequent sinusitis. Primary care physicians can feel comfortable recommending this therapy.

Publication Types:

- Clinical Trial
- Randomized Controlled Trial

PMID: 12540331 [PubMed - indexed for MEDLINE]

The information taken from National Library of Medicine (NLM)
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The NEW ENGLAND JOURNAL of MEDICINE

[A Controlled Trial of Long-Term Inhaled Hypertonic Saline in Patients with Cystic Fibrosis](#)

Elkins M. R., Robinson M., Rose B. R., Harbour C., Moriarty C. P., Marks G. B., Belousova E. G., Xuan W., Bye P. T.P., the National Hypertonic Saline in Cystic Fibrosis (NHSCF) Study Group

N Engl J Med 2006; 354:229-240, Jan 19, 2006.

[Mucus Clearance and Lung Function in Cystic Fibrosis with Hypertonic Saline](#)

Donaldson S. H., Bennett W. D., Zeman K. L., Knowles M. R., Tarran R., Boucher R. C.

N Engl J Med 2006; 354:241-250, Jan 19, 2006.

PEDIATRIC ALLERGY AND IMMUNOLOGY

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Volume 14 Issue 2

[Hypersaline nasal irrigation in children with symptomatic seasonal allergic rhinitis: A randomized study](#)

ABSTRACT

Recent evidence suggests that nasal irrigation with hypertonic saline may be useful as an adjunctive treatment modality in the management of many sinonasal diseases. However, no previous studies have investigated the efficacy of this regimen in the prevention of seasonal allergic rhinitis-related symptoms in the pediatric patient. Twenty children with seasonal allergic rhinitis to Parietaria were enrolled in the study. Ten children were randomized to receive three-time daily nasal irrigation with hypertonic saline for the entire pollen season, which had lasted 6 weeks. Ten patients were allocated to receive no nasal irrigation and were used as controls. A mean daily rhinitis score based on the presence of nasal itching, rhinorrhea, nasal obstruction and sneezing was calculated for each week of the pollen season. Moreover, patients were allowed to use oral antihistamines when required and the mean number of drug assumption per week was also calculated. In patients allocated to nasal irrigation, the mean daily rhinitis score was reduced during 5 weeks of the study period. This reduction was statistically significantly different in the 3th, 4th and 5th week of therapy. Moreover, a decreased consumption of oral antihistamines was observed in these patients. This effect became evident after the second week of treatment and resulted in statistically significant differences during the 3th, 4th and 6th week. **This study supports the use of nasal irrigation with hypertonic saline in the pediatric patient with seasonal allergic rhinitis during the pollen season. This treatment was tolerable, inexpensive and effective.**

Garavello W, Romagnoli M, Sordo L, Gaini RM, Di Bernardino C, Angrisano A. Hypersaline nasal irrigation in children with symptomatic seasonal allergic rhinitis: A randomized study.

