ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 4| April 2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

ADVANTAGES OF INHALATION THERAPY IN THE TREATMENT OF LARYNGITIS

Sabirova Shakhlo Bakhtiyarovna
Samarkand State Medical University, Samarkand, Uzbekistan

Article DOI: https://doi.org/10.36713/epra26962
DOI No: 10.36713/epra26962

ABSTRACT

This article describes the method of inhalation therapy for inflammatory diseases of the larynx of various etiologies, provides the parameters of inhalation procedures in the treatment of laryngitis, and characterizes the main groups of drugs used for inhalation. Recommendations on inhalation regimens for various inflammatory diseases of the larynx are given. The main advantage of inhalation therapy is the ability to achieve a rapid and effective therapeutic effect when using a relatively small dose of the drug and significantly reduce the risk of its adverse systemic effects. The use of inhalation therapy in complex therapy allows for a significant increase in the effectiveness of treatment of this category of patients.

KEYWORDS: *Laryngitis, Inhalation Therapy.*

Treatment of patients with inflammatory pathology of the larynx requires a comprehensive approach. The importance of local anti-inflammatory therapy in the development of treatment tactics is often underestimated. The use of inhalation therapy plays a large role in increasing the effectiveness of treatment of patients with acute and chronic inflammatory processes in the larynx.

The main advantage of inhalation therapy is the ability to achieve a rapid and effective therapeutic effect when using a relatively small dose of the drug and significantly reduce the risk of its adverse systemic effects. During inhalation, drugs are rapidly absorbed into the mucous membrane and stored in the submucosa. A high concentration of the drug is formed directly at the site of inflammation.

Inhalations can be used both as monotherapy for uncomplicated forms of laryngitis and in combination with other treatment methods (systemic antibacterial therapy, physiotherapy) or as symptomatic therapy, for example, to moisturize the larynx mucosa.

For inhalations, antibacterial, antifungal, anti-edema, mucolytic, anti-inflammatory drugs, and agents that increase the moisture content of the mucous membrane are used.

The inhalation procedure must meet certain parameters, such as the dispersion of the aerosol and the temperature regime. Also, to increase the effectiveness of treatment, it is advisable to repeat the inhalations several times a day.

Depending on the degree of dispersion, medium-disperse (5-8 μm) and coarsely dispersed (8-10 μm) aerosols are mainly used in the treatment of upper respiratory tract diseases. The optimal temperature of the aerosol is 36-38°C. In many studies, the function of the ciliated epithelium decreases above 39-40°C at the temperature of inhalation aerosols, and its death is observed above 41°C. Solutions with a temperature below 25-28°C are considered frost-inducing factors. It should also be noted that the biological activity of many preparations sharply decreases or even disappears when heated above 40°C. Hot-moist and steam inhalations against the background of acute laryngitis can lead to the development of edema of the laryngeal mucosa and stenosis of its lumen. In this regard, the use of this type of inhalation for the treatment of inflammatory pathology of the larynx is currently considered inexpedient.

Currently, compressor and ultrasonic nebulizers are more commonly used in treatment practice. Since the treatment of inflammatory diseases of the larynx requires repeated inhalations throughout the day and the procedure must be performed by the patient himself, it is advisable to use portable inhalation devices.

Inhaled forms include antibacterial and antifungal agents, antiseptics, enzymes, hormonal preparations, mucolytics, mineral waters, and plant-based medications. Fat inhalations, popular for many years, are now rarely used, as the inhaled fat penetrates the alveoli, contributing to the development of alveolites and the breakdown of surfactant.

Considering the possibility of developing an allergic reaction, it is necessary to carefully collect an allergic history before starting inhalations.

When drawing up an inhalation therapy plan, it is necessary to adhere to the principle of sequential use of drugs with different pharmacological effects. For example, in the presence of a large amount of sputum, treatment of the mucous membrane, in which surface crusts prevent the absorption of the inhaled substances, should begin with the inhalation of mucolytic agents, mineral waters, and only then, after 10-20 minutes, smell the aerosols of other drugs.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 4| April 2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

The choice of treatment regimen is carried out individually depending on the nature, severity, and stage of inflammation.

Medicinal preparations used for the treatment of acute and chronic laryngitis. **Antibacterial preparations.** A 0.01% solution of Miramistin or a 0.5% solution of Dioxidine is inhaled in pure form or mixed with a 1:1 physiological solution. Inhalation with a 0.05% lysozyme solution is also quite widely used. The combined antibiotic thiamphenicol glycynate acetylcysteinate (fluimucyl-antibiotic) has shown high therapeutic effectiveness, it has a wide spectrum of antimicrobial and mucolytic action. For inhalation, 1/2 vial of the drug is used for inhalation 2 times a day. Other antibacterial drugs, in particular antibiotics, can be used after microbiological examination and determination of the sensitivity of microorganisms. The duration of the treatment course is on average 5-7 days.

Glucocorticosteroids (GCS) have anti-edema and anti-inflammatory effects. GCS inhalations are used for all inflammatory diseases of the larynx, especially those accompanied by swelling of the mucous membrane. Hydrocortisone suspension 25 mg/ml or dexamethasone 1-2 mg in 5 ml of physiological saline. Inhalations are prescribed 2 times a day. The duration of treatment depends on the dynamics of inflammatory changes. In the acute course of the disease, the duration of treatment is 5-7 days, in the exacerbation of chronic inflammatory processes - 7-10 days. A side effect of the use of these drugs may be drying of the laryngeal mucosa. In this regard, it is indicated to inhale alkaline mineral water or physiological saline 10-15 minutes after inhalation of the drug mixture.

Proteolytic Enzymes - trypsin, chymopsin, chymotrypsin, lidaza. Aerosols of proteolytic enzymes have a mucolytic effect, improving mucociliary clearance by reducing sputum viscosity. In the treatment of laryngitis, accompanied by the appearance of crusts and dense fibrinous deposits on the surface of the mucous membrane, the use of proteolytic enzymes by inhalation is indicated. The preparations are diluted with physiological saline: chymopsin - 5 mg/1 ml, chymotrypsin - 3 mg/1 ml, trypsin - 3 mg/1 ml. 3-5 ml of solution is used per 1 inhalation. Lydase is used in 5 ml of physiological saline in the form of a solution containing 64 IU of the drug. Inhalations are prescribed 1-2 times a day for 5-7 days.

Mucolytic Drugs improve the rheological properties of sputum, reduce its viscosity and adhesive properties, normalize mucociliary clearance, have antioxidant and anti-inflammatory effects. Currently, acetylcysteine and ambroxol are the most commonly used drugs. Acetylcysteine is used in a 10% solution 2-4 times a day, 3-9 ml for inhalation - depending on the amount and degree of viscosity of the sputum. The course of treatment is 5-10 days. Ambroxol at a dose of 2-3 ml (15-22.5 mg) 2-3 ml of physiological saline, 1-2 times a day for 4-5 days.

Mineral Water. The main components of mineral water are sodium, calcium, magnesium, chlorine, iron, and radon. Potassium iodide increases the amount of mucus, dilutes it. Magnesium carbonate enhances mucosal secretion, while sodium carbonate reduces and thins mucosal secretion. Saline-alkaline waters reduce the sensation of dryness and cough sensitivity. Mineral waters containing hydrogen sulfide cause dilation of mucosal vessels and a short-term increase in temperature. In this case, the function of the ciliated epithelium is activated. Mineral waters with a salt concentration of up to 150 mg/l are used. According to our data, moderately mineralized waters have the best therapeutic effect: "Yessentuki" No. 4 or "Chortoq"

To enhance the mucolytic effect and moisturize the larynx mucosa, in clinical practice, in addition to mineral waters, a 0.9% sodium chloride solution is successfully used for inhalation at a dose of 2-3 ml, and a 2% sodium bicarbonate solution is successfully used for inhalation at a dose of 2-3 ml. Inhalations of physiological saline can be used for a long time as a symptomatic agent in cases of dryness of the larynx mucosa.

Plant Preparations. For many years, herbal preparations with anti-inflammatory, bactericidal, and mucolytic effects have been successfully used in the treatment of inflammatory diseases of the larynx. The following medication mixtures are recommended for inhalation:

1. Pharmacy Collection: stem-shaped eucalyptus (leaves) 15.0, medicinal sage (leaves) 20.0, chamomile (flowers) 10.0, peppermint (herb) 10.0, common pine (buds) 15.0, tall andiz (roots) 20.0, common thyme (herb) 10.0;
2. Official "Inhalation mixture": menthol 0.71 g, eucalyptus tincture 35.7 g, glycerin 35.7 g, ethyl alcohol 96° 100.0 ml.

Chamomile infusion, 5 ml mixture of aloe extract, eucalyptus, kalanchoe juice, plantain, rosehip extract, 10% natural white honey solution, and others can also be used. To reduce swelling of the mucous membrane and mucus secretion, inhalations with astringent substances are prescribed: decoction of oak bark, lily of the valley, herb infusion.

Before using herbal preparations, it is necessary to collect an allergological history.

Scheme of inhalation treatment of acute catarrhal laryngitis, exacerbation of chronic catarrhal laryngitis

1. Mixture: 0.01% miramistin 2.0 ml + physiological saline 2.0 ml + dexamethasone solution 0.3 ml (1.5 mg). Inhale twice a day for 8-10 minutes.
2. 20 minutes after inhalation of miramistin and dexamethasone, 0.09% (5.0 ml) sodium chloride solution or mineral water "Yessentuki" No 4 or No Chatkal (5.0 ml).
3. For moisturizing the mucous membrane of the larynx with increased dryness (especially in individuals whose profession is associated with the active use of voice), inhalations of mineral water or physiological saline as a moisturizing agent can be used up to 5-6 times a day. Inhalation duration 5-10 min. The course of treatment is 7-10 days.
4. After the completion of the course of inhalation with the antibacterial drug and GCS, when inflammatory phenomena persist, inhalation with the "Mixture for Inhalation" 2 times a day for 10 minutes is indicated. Course duration - 10 sessions.

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 4| April 2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

Scheme of inhalation treatment of acute edematous laryngitis, exacerbation of chronic edematous polypoid laryngitis

1. Dexamethasone 2 mg is mixed with 3 ml of physiological saline 2 times a day for 10 minutes. With pronounced swelling of the laryngeal mucosa, the dose of dexamethasone can be increased to 4 mg, with inhalations up to 3 times a day.
2. In case of dryness of the laryngeal mucosa after GCS inhalation - 5.0 ml of alkaline mineral water or 5.0 ml of physiological saline for 10 minutes, as well as throughout the day.

The course of treatment for acute inflammation is 3-7 days, and for chronic inflammation - 7-10 days.

Scheme of inhalation treatment of exacerbation of infiltrative, phlegmonous, abscessing laryngitis, chronic hyperplastic laryngitis

In these forms of laryngitis, inhalation is an auxiliary treatment method. Basic therapy consists of systemic antibacterial therapy, anti-inflammatory, antihistamines, and detoxification therapy.

Inhalations are carried out according to the following scheme.

1. If there is a fibrinous coating, cortex, therapy begins with inhalation of proteolytic enzyme, mucolytic, alkaline mineral water or physiological solution. One of the above preparations is used. Inhalation duration is 7-8 min.
2. After 10 minutes - antiseptic or combined antibiotic solution. When fungal flora is detected, inhalation with antifungal preparations is performed.
3. The duration of inhalation is 8-10 min. After 15-20 min - GCS inhalation. Conducted 2 times a day, duration 5-10 minutes.
4. Inhalation of alkaline mineral water or physiological saline is performed when dry and unpleasant sensations appear in the pharynx and larynx. The duration of inhalation is 8-10 min.

The course of treatment is 7-10 days. In chronic hyperplastic laryngitis, after the completion of the inhalation course with antibacterial and anti-inflammatory drugs to moisturize the larynx mucosa and reduce secretion viscosity, inhalations with alkaline mineral water or physiological saline are prescribed from 2 to 6 times a day for 8-10 minutes for 2-3 weeks.

Inhalation regimen for chronic subatrophic and atrophic laryngitis

1. If there are crusts, mucolytic or proteolytic enzyme inhalation is performed 2 times a day. The duration of inhalation is 8-10 minutes, followed by inhalation of alkaline mineral water or physiological saline 4-6 times a day for 10 days or for an extended period (up to 3-4 weeks).2 times a day. The duration of inhalation is 8-10 min.
2. Inhalation with a mixture of prepared medicinal herbs 2 times a day for 10 days after the completion of the previous course of therapy. Inhalation duration 10 min.

For moisturizing the laryngeal mucosa, it is recommended to use long-term regular inhalations of alkaline mineral water or physiological saline 2-4 times a day.

It should be noted that the treatment of inflammatory diseases of the larynx should be comprehensive. When planning therapy, it is necessary to take into account the individual characteristics of the patient: age, duration of the disease, degree of manifestation of inflammatory changes, nature of vocal load, features of professional activity, presence of concomitant pathology. The use of inhalation therapy in complex therapy allows for a significant increase in the effectiveness of treatment of this category of patients.

LITERATURE

1. *Sano Y., Horimatsu T., Fu K.I., Atsushi K., Manabu M., Hisao T. et al. Extended observation of microvascular architecture using narrow-band imaging for differential diagnosis between non-neoplastic and neoplastic colorectal lesions: a prospective study. Gastrointest. Endosk. 2006; 63. AB102. https://doi.org/10.1016/j.gie.2006.03.106.*
2. *Tajiri H., Niwa H. Proposal on consensus terminology in endoscopy: how to group and define different methods of endoscopic imaging? Endoscopy. 2008;40;9:775-778. https://doi.org/10.1055/s-2008-1077507*
3. *Uraoka T., Saito Y., Matsuda T., Sano Y., Ikehara H., Machimo Y. et al. Detection of colorectal neoplastic lesions using a narrow-band imaging system: experimental study. J. Gastroenterol Hepatol. 2008, 23:1810-1815. https://doi.org/10.1111/j.1440-1746.2008.05635.x*
4. *Curvers W. L., Wong Kee Song L. M., Wang K., Gostout C. J., Wolfsen H. C. et al. Endoscopic trimodal imaging to detect dysplastic foci in Barrett's esophagus. Gastroenterology. 2006; 130 (2): 642.*
5. *Kara M. A., Peters F. P., Fockens P., Fiebo J. W., Jacques J. G. H. M. Endoscopic video-autofluorescence imaging followed by narrow band imaging to detect early neoplasia in Barrett's esophagus. Gastrointest. Endosk. 2006; 64 (2):176-185. https://doi.org/10.1016/j.gie.2005.11.050*
6. *Klimov A. N. Use of tissue glue in removing benign formations of the larynx. Folia, O.R. et. PR. 2012;18 (3):51.*
7. *Stepanova Yu. E., Gotovyakhina T. V., Makhotkina N. N. The Importance of Timely Diagnosis of Laryngeal Diseases During Primary Examination by an Otorhinolaryngologist. Medical Council. 2018;20:58-64. doi:10.21518/2079-701X-2018-20-58-64*
8. *Vasilenko, Yu. S. Golos. Phoniatric Aspects. Moscow: Dipak, 2013. 396 p. Otorhinolaryngology: National Guide. Edited by V. T. Palchuna M: GEOTAR-Media, 2016. 1024 p.*
9. *Stepanova Yu. E. Modern methods of diagnosing diseases of the larynx. Doctor.Ru. 2009;5:31-34. https://elibrary.ru/item.asp?id=13056607&*
10. *Romanenko, S. G., Pavlikhin, O. G., Lesogorova, Ye. V., Krasnikova D. I., Yakovlev V. S. Professional Selection of Voice-Speech Professionals. Bulletin of Otorhinolaryngology. 2015;80:S5:175-176. https://elibrary.ru/item.asp?id=36699533*
11. *Romanenko S. G., Pavlikhin O. G. Nodes of Voice Folds. RMJ. 2011;24:14761477.https://www.rmj.ru/articles/otorinolaryngology/Uzelki_golosovyh_skladok/*

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 4| April 2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

12. *Zeltin A. E., Romanenko S. G., Kovalevskaya O. B., Seravina O. F., Veltishev D. Yu. Psychotraumatic factors and mental disorders in patients with laryngeal granuloma. Social and Clinical Psychiatry. 2018;28 (1):29-35. doi:10.17116/zhnevro20151155115-19.*
13. *Kryukov A. I., Romanenko S. G., Lesogorova E. V., Polyayeva T. K., Savvateeva N. V., Krasnikova D. I., Pavlikhin O. G., Yeliseev O. V., Yakovlev V. S. Treatment of patients with rubs changes in vocal folds after endolaryngeal interventions. Bulletin of Otorhinolaryngology. 2018;83;S5:116-117. https://elibrary.ru/item.asp?id=36509718*
14. *16. Kryukov A. I., Romanenko S. G., Lesogorova E. V. Therapeutic algorithm for postoperative management of patients with chronic pathogenic polypoid laryngitis. Russian Otorhinolaryngology. 2016; 2 (81):54-59. doi:10.18692/1810-4800-2016-2-54-59.*
15. *Khudoykulova, F. V., & Kalonov, S. S. (2024). Assessment of bile acid circulation in the liver and intestines in non-alcoholic fatty liver disease. Science and Education, 5 (3), 125-133. (Uzb)*
16. *Matmurodov R., Egamova M. Evaluation of clinical aspects of rehabilitation of children with cerebral palsy //Journal of Neurological Sciences. - 2021. - T. 455.*
17. *Khudoykulova, F. V. (2024). Assessment of the effectiveness of diet therapy with the addition of a special food product in the treatment of non-alcoholic steatohepatitis.Science and Education, 5 (9), 38-53. (Uzb)*
18. *Egamova M., Mavlyanova Z., Burkhanova G. Application of Therapeutic Physical Education in Children's Cerebral Palsy at Home // Journal of the Doctor's Bulletin. - 2018. - Vol. 1. - No. 2. - P. 114-117.*
19. *Anatolevna, Kim Olga, Abdusalomova, Maftuna Akbarovna, and Makhmudov, Sardor Mamasharifovich. "Zhalolitdinova Shakhnoza Akbarzhon kizi, & Ibragimova Leyla Ilkhomovna. (2022). the influence of risk factors on the development of cerebral strokes in children. open access repository, 8 (04), 179-182."*
20. *Khudoykulova, F. V. (2024). The importance of diet therapy and physical activity in the treatment of non-alcoholic fatty liver disease. Science and Education, 5 (9), 54-63.*
21. *IBRAGIMOVA M. CHILDREN'S CEREBRAL PARALYSIS. RISK FACTORS, REHABILITATION CHARACTERISTICS (LITERATURE REVIEW) //Journal of Experimental Studies. - 2021. - Vol. 2. - No. 3. - P. 9-19.*