Registered in Germany Europa Revue Journal
ISSN: 1862-6564 Vol. 6 No. 10 (2026) Published October 12, 2026

Specific Aspects of Pharmacotherapy for Upper Respiratory Tract Diseases

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Abstract

This article discusses contemporary clinical and pharmacological approaches to the management of upper respiratory tract diseases. Most upper respiratory tract infections are viral in origin; therefore, the selection of pharmacotherapy should be guided by the presumed etiology, clinical presentation, disease severity, and individual characteristics of the patient. The principal objectives of pharmacological management are to relieve symptoms, improve the patient's general condition, prevent complications, and provide etiologically directed treatment when clinically indicated. Appropriate analgesic and antipyretic agents may be used to control pain and fever, while suitable topical or systemic symptomatic therapies can be considered for nasal congestion. Antibiotics should not be routinely prescribed when there is no clinical evidence of bacterial infection because they are ineffective against viral infections and unnecessary use may expose patients to adverse effects and contribute to antimicrobial resistance. In acute rhinosinusitis and pharyngitis, careful clinical assessment is particularly important before initiating antibacterial therapy. Individualization of pharmacotherapy should take into consideration the patient's age, comorbidities, concomitant medications, history of drug allergy, and potential risk of adverse drug reactions. Therefore, rational pharmacotherapy for upper respiratory tract diseases should be based on accurate clinical assessment, appropriate selection of symptomatic treatment, responsible antibiotic prescribing, and regular evaluation of therapeutic response. This approach can improve medication safety while supporting effective management and reducing unnecessary antimicrobial exposure.

Keywords

upper respiratory tract diseases, pharmacotherapy, upper respiratory tract infection, viral infection, bacterial infection, symptomatic treatment, antibiotics, antimicrobial resistance, rhinosinusitis, pharyngitis, rational pharmacotherapy, medication safety.

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Farmakoterapiyada yuqori nafas yo’llari kasallliklarini davolashning o’ziga xos jihatlari

Qosimov Zafarbek odiljon o’g’li - Andijon davlat tibbiyot institute Farmakologiya, klinik farmakologiya va tibbiyot biotexnologiyalari kafedrasi katta o’qituvchisi

Annotatsiya. Ushbu maqolada yuqori nafas yo‘llari kasalliklarida farmakoterapiyani tashkil etishning zamonaviy klinik-farmakologik jihatlari yoritilgan. Yuqori nafas yo‘llari infeksiyalarining aksariyati virusli etiologiyaga ega bo‘lib, ularni davolashda dori vositalarini kasallikning etiologiyasi, klinik kechishi va bemorning individual xususiyatlariga muvofiq tanlash muhim ahamiyatga ega. Farmakoterapiyaning asosiy yo‘nalishlari simptomlarni kamaytirish, bemorning umumiy holatini yaxshilash, asoratlarning oldini olish va zarur hollarda etiologik davolashni amalga oshirishdan iborat. Isitma va og‘riqni nazorat qilishda mos analgetik-antipiretik preparatlardan, burun bitishida esa tegishli mahalliy yoki tizimli simptomatik vositalardan foydalanish mumkin. Bakterial infeksiyaga klinik asoslar mavjud bo‘lmagan holatlarda antibiotiklarni buyurish tavsiya etilmaydi, chunki ularning virusli infeksiyalarga ta’siri yo‘q va asossiz qo‘llanish nojo‘ya reaksiyalar hamda antimikrob rezistentlik xavfini oshiradi. Ayniqsa, o‘tkir rinosinusit va faringitda antibiotik terapiyasini boshlashdan oldin bakterial etiologiyani ko‘rsatuvchi klinik belgilarni baholash muhimdir. Farmakoterapiyani individuallashtirishda bemorning yoshi, hamroh kasalliklari, qabul qilayotgan boshqa dori vositalari, allergologik anamnezi va nojo‘ya reaksiyalar xavfi hisobga olinishi lozim. Shunday qilib, yuqori nafas yo‘llari kasalliklarida ratsional farmakoterapiya klinik tashxisni to‘g‘ri shakllantirish, simptomatik vositalarni asosli tanlash, antibiotiklardan oqilona foydalanish va davolash samaradorligini muntazambaholashgaasoslanadi.

Kalit so‘zlar: yuqori nafas yo‘llari kasalliklari, farmakoterapiya, yuqori nafas yo‘llari infeksiyasi, virusli infeksiya, bakterial infeksiya, simptomatik davolash, antibiotiklar, antimikrob rezistentlik, rinosinusit, faringit, ratsional farmakoterapiya, dori vositalari xavfsizligi.

Особенности фармакотерапии заболеваний верхних дыхательных путей

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Аннотация. В статье рассмотрены современные клинико-фармакологические подходы к фармакотерапии заболеваний верхних дыхательных путей. Большинство инфекций верхних дыхательных путей имеют вирусную этиологию, поэтому выбор лекарственной терапии должен основываться на предполагаемой причине заболевания, клинической картине, тяжести состояния и индивидуальных особенностях пациента. Основными задачами фармакотерапии являются уменьшение выраженности симптомов, улучшение общего состояния пациента, профилактика осложнений и проведение этиотропного лечения при наличии соответствующих клинических показаний. Для контроля лихорадки и болевого синдрома могут применяться соответствующие анальгетики и жаропонижающие средства, а при заложенности носа — подходящие местные или системные симптоматические препараты. При отсутствии клинических признаков бактериальной инфекции рутинное назначение антибиотиков не рекомендуется, поскольку они неэффективны при вирусных инфекциях, а их необоснованное применение повышает риск нежелательных лекарственных реакций и способствует развитию антимикробной резистентности. При остром риносинусите и фарингите перед началом антибактериальной терапии особенно важно провести клиническую оценку вероятной этиологии заболевания. При индивидуализации фармакотерапии необходимо учитывать возраст пациента, сопутствующие заболевания, одновременно применяемые лекарственные средства, аллергологический анамнез и вероятность развития нежелательных лекарственных реакций. Таким образом, рациональная фармакотерапия заболеваний верхних дыхательных путей должна основываться на правильной клинической оценке состояния пациента, обоснованном выборе симптоматических средств, рациональном применении антибиотиков и регулярном контроле эффективности и безопасности лечения.

Ключевые слова: заболевания верхних дыхательных путей, фармакотерапия, инфекция верхних дыхательных путей, вирусная инфекция,

бактериальная инфекция, симптоматическое лечение, антибиотики, антимикробная резистентность, риносинусит, фарингит, рациональная фармакотерапия, безопасность лекарственной терапии.

Introduction. Upper respiratory tract diseases constitute a substantial proportion of conditions treated in outpatient medical practice. They include a broad spectrum of disorders affecting the nasal cavity, paranasal sinuses, pharynx, larynx, and related upper airway structures. Common clinical presentations include the common cold, acute rhinitis, pharyngitis, tonsillopharyngitis, acute rhinosinusitis, and other nonspecific upper respiratory tract infections.From a clinical pharmacology perspective, the treatment of these diseases presents a particular challenge because similar clinical manifestations may arise from different etiological mechanisms. Nasal obstruction, rhinorrhea, sore throat, cough, headache, fever, and general weakness can occur in viral infections as well as in some bacterial conditions. Consequently, pharmacotherapy should not be selected solely on the basis of individual symptoms. Instead, treatment decisions should integrate the probable etiology, clinical severity, duration and progression of symptoms, risk factors, comorbidities, and the patient's previous medication exposure.Current outpatient guidance emphasizes that most uncomplicated upper respiratory tract infections are viral and do not require antibacterial treatment. [1,2]. Unnecessary antibiotic use provides little or no benefit in viral disease while exposing patients to possible adverse reactions and contributing to antimicrobial resistance. Therefore, the rational pharmacotherapy of upper respiratory tract diseases is based on a combination of appropriate clinical assessment, targeted symptomatic treatment, selective use of antimicrobial agents, monitoring of therapeutic response, and continuous evaluation of medication safety. Etiological Considerations in Pharmacotherapy.The etiological diagnosis is one of the fundamental determinants of pharmacotherapeutic strategy. Viral pathogens are responsible for a large proportion of common upper respiratory tract infections. In such cases, pharmacological treatment is generally aimed at reducing the intensity of symptoms and maintaining the patient's functional status while the infection resolves naturally.

A major clinical pharmacology principle is therefore to distinguish between

treatment of the disease cause and treatment of its manifestations. Analgesic and antipyretic medications may reduce fever, headache, myalgia, and throat discomfort, but they do not necessarily eliminate the infectious agent. Similarly, medications used to relieve nasal congestion may improve breathing and comfort without influencing the underlying viral process.This distinction is particularly important because the presence of purulent or colored nasal discharge alone should not automatically be interpreted as evidence of bacterial infection. Inappropriate interpretation of such symptoms may lead to unnecessary antimicrobial therapy. CDC guidance notes that most cases of acute rhinosinusitis are viral and recommends clinical criteria for identifying patients in whom bacterial disease is more likely. Consequently, pharmacotherapy should begin with an assessment of the probable etiology rather than with the selection of a medication.

Symptomatic therapy is an important component of the management of uncomplicated upper respiratory tract diseases. The principal objective is to reduce the severity of manifestations such as fever, pain, nasal obstruction, rhinorrhea, and throat irritation. [3,4,5,6].

Literature review. Analgesic and Antipyretic Therapy. Analgesic and antipyretic agents can be used to manage fever, headache, myalgia, and throat pain when clinically indicated. Paracetamol and nonsteroidal anti-inflammatory drugs are commonly considered for symptom relief, although the selection of a particular agent should depend on the patient's clinical characteristics and contraindications.The use of these medications should not be regarded as completely risk-free. Excessive dosing, duplication of products containing the same active ingredient, gastrointestinal risks associated with certain nonsteroidal anti-inflammatory drugs, renal impairment, and interactions with concomitant medications should be considered during treatment.

Therefore, rational symptomatic therapy requires not only knowledge of pharmacological efficacy but also appropriate evaluation of medication safety.

Nasal obstruction and rhinorrhea are among the most frequent manifestations of upper respiratory tract infections. Depending on the clinical situation, saline preparations and selected topical nasal medications may be considered.

Topical sympathomimetic decongestants can provide short-term relief of nasal

obstruction; however, prolonged use may lead to rebound congestion. NICE specifically highlights the risk of rebound congestion associated with prolonged use of topical nasal decongestants. Consequently, the duration and method of administration should be considered carefully. Patients should also be informed about the appropriate use of these medications rather than being encouraged to continue treatment indefinitely. Cough accompanying upper respiratory tract infections is frequently self-limiting. The pharmacotherapeutic approach depends on its severity, duration, and underlying cause. Before prescribing antitussive or other cough-directed medications, the clinician should assess whether the cough represents an uncomplicated respiratory infection or may indicate another condition requiring further investigation. [10,14].CDC guidance indicates that evidence supporting specific symptomatic therapies for uncomplicated respiratory conditions is limited, emphasizing the importance of balancing potential benefits against adverse effects.

Results. Rational Use of Antibiotics. One of the most important pharmacotherapeutic issues in upper respiratory tract diseases is appropriate antimicrobial prescribing. Antibiotics have no therapeutic effect against viral infections, and routine prescribing for uncomplicated viral respiratory disease is not justified. Inappropriate antibiotic use may cause adverse drug reactions, disrupt normal microbiota, increase healthcare costs, and contribute to the development and spread of antimicrobial resistance. Current CDC recommendations emphasize that antibiotics should be reserved for conditions in which a bacterial etiology is sufficiently likely or confirmed. Acute Rhinosinusitis. Acute rhinosinusitis is an important example of a condition in which clinical differentiation between viral and bacterial disease is essential. CDC guidance describes severe, persistent, or worsening symptom patterns that increase the likelihood of acute bacterial rhinosinusitis. In uncomplicated cases, observation may be appropriate when reliable follow-up is available. NICE similarly recommends that antibiotics should not routinely be offered when symptoms have been present for approximately 10 days or less without evidence suggesting a more serious bacterial process. It also recognizes the role of either withholding antibiotics or using a delayed prescription strategy in selected cases. These recommendations demonstrate an

important principle of clinical pharmacology: the decision to prescribe an antibiotic is itself a therapeutic decision and should be based on an assessment of expected benefit versus potential harm.Important patient-related factors include: age,pregnancy and lactation, renal function hepatic function, cardiovascular status, history of gastrointestinal disease,bronchial hyperreactivity or asthma, drug allergies; concomitant medications, previous adverse drug reactions, duration and severity of symptoms. For example, a decongestant that may provide symptomatic benefit in one patient could require caution in another because of cardiovascular or other contraindications. Similarly, nonsteroidal anti-inflammatory drugs may require careful consideration in patients with gastrointestinal, renal, or cardiovascular risk factors.Polypharmacy is particularly important in older adults and patients with multiple chronic diseases. Combination cold remedies may contain several active ingredients, increasing the possibility of duplication, interactions, and unintended excessive dosing. [20,22,23].

Antimicrobial StewardshipThe pharmacotherapy of upper respiratory tract diseases is closely associated with antimicrobial stewardship. The objective of stewardship is not simply to reduce antibiotic use but to improve the appropriateness of antimicrobial therapy. This involves several principles:

prescribing antibiotics only when clinically justified;

selecting an appropriate antimicrobial agent when bacterial infection is suspected or confirmed; avoiding unnecessary broad-spectrum therapy;

using an appropriate treatment duration;

reassessing patients whose clinical condition deteriorates or fails to improve;

educating patients about the limitations of antibiotics.

CDC data have continued to identify inappropriate antibiotic prescribing for respiratory conditions as an area for improvement in outpatient care.

From the perspective of clinical pharmacology, antimicrobial stewardship can therefore be regarded as an integral part of medication safety and rational prescribing. Clinical Monitoring and Evaluation of Treatment

Pharmacotherapy should not end with the prescription. The clinical response should be evaluated according to the expected course of the disease. Monitoring should

include:reduction in fever and pain, improvement of nasal obstruction and rhinorrhea, changes in cough and throat symptoms, emergence of adverse drug reactions, development of new or worsening symptoms, adherence to the prescribed regimen.

Discussion. The pharmacotherapy of upper respiratory tract diseases requires a balance between symptomatic benefit, etiological treatment, and medication safety. The principal difficulty lies in the clinical similarity between viral and bacterial conditions. A symptom-oriented approach without adequate etiological assessment can result in unnecessary medication use, particularly unnecessary antibiotic prescribing. Modern clinical pharmacology increasingly emphasizes individualized treatment and evidence-based prescribing. In uncomplicated viral infections, the main objective is generally symptom control and prevention of medication-related harm rather than elimination of the infectious agent. When bacterial infection is sufficiently likely, antimicrobial therapy should be guided by the clinical diagnosis and relevant diagnostic findings.[28,29].

Another important aspect is patient communication. Patients may expect antibiotics when they have fever, productive cough, sore throat, or colored nasal discharge. However, these findings do not automatically establish a bacterial infection. Effective communication about the expected course of illness, the purpose of symptomatic therapy, and the potential harms of unnecessary antibiotics can support rational medication use. Consequently, pharmacotherapy should be understood as a dynamic clinical process consisting of assessment, treatment selection, monitoring, and reassessment rather than as the simple prescription of a drug.

Conclusion. The pharmacotherapy of upper respiratory tract diseases has several distinctive features related to their diverse etiology, predominantly viral nature, overlapping clinical manifestations, and the potential for inappropriate medication use. Rational treatment requires accurate clinical assessment before pharmacological intervention and should prioritize evidence-based symptomatic management when bacterial infection is not established. Antibiotic therapy should be reserved for situations in which bacterial disease is sufficiently suspected or confirmed and should be accompanied by appropriate selection of the antimicrobial agent and consideration of individual patient factors. Symptomatic medications should likewise be prescribed

according to the patient's clinical needs, contraindications, potential drug interactions, and risk of adverse reactions.

Individualization, medication safety, antimicrobial stewardship, patient education, and treatment monitoring are therefore essential components of modern pharmacotherapy for upper respiratory tract diseases. Such an approach can improve the quality of pharmacological care while reducing unnecessary medication exposure and supporting responsible antimicrobial use.

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