THE ROLE OF MODERN COMPUTER TECHNOLOGIES IN DIAGNOSIS AND TREATMENT OF ASTHMA

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Abstract

This article discusses the role of modern computer technologies in the diagnosis and treatment of asthma. Additionally, the article provides information about asthma and its types. This article can be useful for students studying in the field of medicine as well as independent researchers.

Keywords: Asthmatic, persistent, intermittent, infection, bronchitis, personalization, biocamera, spirometry, influenza.

Introduction

Bronchial Asthma   bronchial asthma is a chronic inflammatory disease of the respiratory system. It can develop in childhood (before the age of ten), but with proper treatment methods, it can be completely cured. Asthma occurs in four stages:1. Intermittent (periodic): The disease exacerbates and asthma attacks occur once or twice a month.2. Mild persistent: Exacerbations and asthma attacks occur weekly.3. Moderate persistent: The disease exacerbates daily, with multiple nighttime attacks.4. Severe persistent: Symptoms worsen throughout the day, and night attacks occur regularly.Asthma occurs when the bronchi narrow due to inflammation, swelling, or mucus plugs. The causes of asthma vary and may include:Genetic predisposition,Allergies (to dust, pollen, animal dander, food, and chemicals),Environmental irritants (tobacco smoke, irritating gases),Bacterial and viral infections (e.g., bronchitis, flu),Medications (anti-inflammatory, antipyretics, painkillers),Stress, fear, and emotional factors,Excessive physical activity.Symptoms include:Nighttime coughing fits,Breathing difficulties,

shortness of breath,Mucus production,Wheezing while breathing,Chest tightness,Clinical Symptoms:Itching or tightnessDry or episodic coughDifficulty breathing (especially at night or in the morning)Wheezing sounds caused by airway narrowing.Diagnosis and Tests:In patients with bronchial asthma, sputum is examined for the presence of granulocytes (granular leukocytes), which show the extent of inflammation. In addition:Bronchoscopy helps specialists assess the condition of the respiratory tract lining, the type and spread of inflammation, and the depth of the damage.Bronchography examines the condition of the bronchi.Each method has its own advantages in identifying respiratory tract changes and assessing which part of the lungs is affected.Modern medicine is well-equipped to diagnose and treat bronchial asthma comprehensively. To prevent asthma attacks, long-term, gradual treatment is required. Anti-inflammatory medications and long-acting bronchodilators are commonly used, especially inhaled glucocorticosteroids, which are highly effective.Other medications like aerosol inhalers, sodium cromoglycate, aerocrom, and nedocromil sodium are administered under medical supervision. Glucocorticosteroids (GCS) are vital in asthma treatment. Using them locally (inhalation) helps avoid oral steroids and reduces the risk of complications.Modern Technologies in Asthma Diagnosis:Artificial intelligence and machine learning algorithms help identify asthma symptoms and assess the risk based on patient history.Digital respiratory devices monitor breathing parameters in real time and analyze data to prevent and control asthma attacks.Mobile apps allow patients to track breathing, medication use, and symptoms, serving as personal monitoring tools.Modern Treatments:Telemedicine allows remote consultation with doctors, helping patients maintain regular treatment.Personalized drug therapy uses genetic and biomarker data to select suitable medications for the individual patient.Virtual reality (VR) helps patients learn and practice breathing exercises, reduce stress, and improve respiratory function.Importance of Early Detection:Early diagnosis is crucial to improving life quality and preventing complications. Today's widely used technologies include:Digital diagnostic software that analyzes pulmonary data and evaluates breathing functions.Mobile apps connected to spirometry devices for home monitoring and online reporting to doctors.Patient history review helps detect hereditary and environmental causes.Physical examination identifies airway conditions through listening.Peak Expiratory Flow (PEF) test measures the speed

of air exhalation and detects airway narrowing during attacks.Allergy tests (skin or blood) determine allergic triggers.Inflammation marker tests (like eosinophil level in blood) help in diagnosis.

References

1. Anvarovich, A. S., & Omonjon o'g'li, M. H. (2025). THE ROLE OF MODERN COMPUTER TECHNOLOGIES IN THE DIAGNOSIS AND TREATMENT OF GASTRITIS. EduVision: Journal of Innovations in Pedagogy and Educational Advancements, 1(4), 766-770.

2. Bakhtiyorjonovna, N. S., & Anvarovich, A. S. (2025). The Role of Medical Technologies in The Treatment of Endocrine Glands. International Journal of Management and Economics Fundamental, 5(04), 64-67.

3. Anvarovich, A. S. (2025). Modern Computer Laboratory Technologies and Their Role in Medicine. International Journal of Management and Economics Fundamental, 5(04), 59-63.

4. Anvarovich, A. S., & Ahadjonovna, Y. D. (2025). Developing Students' Critical Thinking Through Biological Problem Modeling Technologies in Medical Education. American Journal of Biomedical Science & Pharmaceutical Innovation, 5(04), 33-37.

5. Anvarovich, A. S. (2025). IMPROVING THE PREVENTIVE EFFECTIVENESS OF HEALTHCARE SYSTEMS THROUGH INFORMATION TECHNOLOGY: ELECTRONIC HEALTH AND MEDICAL SERVICE MONITORING. EduVision: Journal of Innovations in Pedagogy and Educational Advancements, 1(4), 579-583.