UDK: 616.24-002.5:616.72-002-07

RESPIRATORY MANIFESTATIONS OF RHEUMATOID ARTHRITIS: PATTERNS OF PULMONARY INVOLVEMENT AND THEIR CLINICAL SIGNIFICANCE

Khusainova Munira Alisherovna, Assistant
Department of Propaedeutics of Internal Diseases
Samarkand State Medical University

Abstract: Respiratory involvement is a common extra-articular manifestation of rheumatoid arthritis and contributes substantially to morbidity and mortality. Pulmonary complications include interstitial lung disease, pleural disease, airway disorders, bronchiectasis, bronchiolitis, rheumatoid nodules, and pulmonary hypertension. Interstitial lung disease occurs in 10–52% of patients and may remain clinically silent for prolonged periods. High-resolution computed tomography and pulmonary function testing are considered the most informative approaches for detection and monitoring. Early recognition of respiratory abnormalities is therefore essential for risk assessment, individualized management, and prevention of progressive respiratory failure in rheumatoid arthritis clinically.

Keywords: rheumatoid arthritis; pulmonary involvement; interstitial lung disease; high-resolution computed tomography; respiratory function.

РЕСПИРАТОРНЫЕ ПРОЯВЛЕНИЯ РЕВМАТОИДНОГО АРТРИТА: ВАРИАНТЫ ПОРАЖЕНИЯ ЛЕГКИХ И ИХ КЛИНИЧЕСКОЕ ЗНАЧЕНИЕ

Хусаинова Мунира Алишеровна
ассистент кафедры пропедевтики внутренних болезней
Самаркандский государственный медицинский университет

Аннотация: Поражение органов дыхания является частым внесуставным проявлением ревматоидного артрита и существенно влияет на заболеваемость и смертность. Легочные осложнения включают интерстициальное заболевание легких, плевральные поражения, заболевания

дыхательных путей, бронхоэктазы, бронхиолиты, ревматоидные узелки и легочную гипертензию. Интерстициальное заболевание легких выявляется у 10–52% пациентов и длительно может протекать бессимптомно. Компьютерная томография высокого разрешения и исследование функции легких считаются наиболее информативными методами выявления и мониторинга. Раннее распознавание респираторных нарушений важно для оценки риска, своевременного лечения и профилактики прогрессирования дыхательной недостаточности при ревматоидном артрите. Особое значение имеют серопозитивность, курение, мужской пол и пожилой возраст пациента.

Ключевые слова: ревматоидный артрит; поражение легких; интерстициальное заболевание легких; компьютерная томография высокого разрешения; функция дыхания.

Introduction: Rheumatoid arthritis is a systemic immune-inflammatory disease in which pulmonary involvement represents one of the most important extra-articular manifestations. Respiratory abnormalities may affect the lung interstitium, pleura, large and small airways, pulmonary vessels, and may also appear as rheumatoid nodules. Pulmonary injury accounts for up to 20% of deaths among patients with rheumatoid arthritis and represents the second leading cause of death after cardiovascular disease. Importantly, respiratory abnormalities may develop before articular manifestations in 10–20% of patients, making recognition of pulmonary involvement clinically relevant. Interstitial lung disease is among the most serious pulmonary complications and is reported in 10–52% of patients, although the prevalence depends strongly on the diagnostic method. Pulmonary function abnormalities have been described in 30–49% of patients, whereas chest radiography may remain normal despite functional impairment. High-resolution computed tomography can identify pulmonary abnormalities in almost half of patients in some cohorts, while respiratory complaints are reported by only about 10%. Risk appears particularly increased in men aged 50–60 years, especially smokers, with a reported male-to-female ratio of approximately 2:1 for interstitial

manifestations. High rheumatoid factor and anti-cyclic citrullinated peptide antibody concentrations, as well as subcutaneous rheumatoid nodules, are also associated with pulmonary involvement. These findings emphasize the importance of systematic respiratory assessment even when respiratory symptoms are absent.

Aim of the study: To characterize the principal pulmonary manifestations of rheumatoid arthritis, determine their clinical and diagnostic significance, and summarize objective approaches for early detection and monitoring of respiratory involvement.

Materials and methods. A structured clinical and diagnostic analysis of rheumatoid arthritis-associated pulmonary disease was performed using the information presented in the source review and the cited clinical, radiological, functional, and pathological studies. The analysis included interstitial, pleural, airway, vascular, and nodular pulmonary manifestations. Particular attention was given to interstitial lung disease because it represents one of the most frequent and clinically serious respiratory complications. The reported prevalence ranges, patterns of pulmonary dysfunction, risk factors, symptoms, imaging characteristics, and prognostic indicators were compared. Pulmonary function testing was considered as an objective assessment of respiratory impairment, while chest radiography and high-resolution computed tomography were evaluated as imaging approaches. The review also considered histological descriptions when available. Interstitial pneumonia patterns were classified according to established radiological and pathological terminology, including usual interstitial pneumonia, nonspecific interstitial pneumonia, and organizing pneumonia. Clinical assessment included dyspnea, nonproductive cough, exercise intolerance, chest pain, fever, and physical signs such as basal inspiratory crackles. Serological characteristics, particularly rheumatoid factor and anti-cyclic citrullinated peptide antibodies, were considered in relation to pulmonary risk. Diagnostic performance was interpreted in the context of subclinical disease because pulmonary abnormalities may be present despite limited symptoms. Prognostic assessment incorporated progression of respiratory failure, development of pulmonary hypertension, and mortality. The

analysis also considered the clinical relevance of smoking, male sex, age, rheumatoid nodules, and high autoantibody titers.

Results. The analysis demonstrated substantial heterogeneity of respiratory involvement in rheumatoid arthritis. Pulmonary function abnormalities were reported in 30–49% of patients, and obstructive dysfunction represented at least half of the functional abnormalities, while restrictive and mixed patterns accounted for approximately 20–30%. Chest radiography detected obvious pulmonary fibrosis in only about 5% of patients, whereas high-resolution computed tomography revealed abnormalities in almost half of examined patients. Only approximately 10% of patients reported respiratory complaints, emphasizing the frequent subclinical nature of pulmonary disease. Interstitial lung disease was reported in 10–52% of patients with rheumatoid arthritis, and high-resolution computed tomography identified interstitial abnormalities in 19–67% of studied patients. Histological examination demonstrated interstitial abnormalities in up to 80%, although this figure may overestimate clinically significant disease because asymptomatic patients with preserved pulmonary function were included. Usual interstitial pneumonia represented up to 65% of interstitial patterns, nonspecific interstitial pneumonia up to 44%, and organizing pneumonia approximately 8%. Nonspecific interstitial pneumonia occurred in about one-third of patients and generally showed a more favorable course than usual interstitial pneumonia. The risk of interstitial lung disease was reported to be nine times higher than in the general population, while mortality was 2–3 times higher than among patients with rheumatoid arthritis without interstitial involvement. Pulmonary interstitial manifestations predominated among men aged 50–60 years, particularly smokers, with an approximate male-to-female ratio of 2:1. High rheumatoid factor or anti-cyclic citrullinated peptide antibody titers and subcutaneous rheumatoid nodules were additional risk indicators. In approximately 75% of patients with the usual interstitial pneumonia pattern, digital clubbing developed. Pleural disease was also clinically important: autopsy studies detected pleural effusion in approximately

70%, although clinically apparent pleuritis occurred in about 20%, and pronounced clinical manifestations in no more than 5%.

Conclusions: Pulmonary involvement in rheumatoid arthritis is frequent, heterogeneous, and often clinically silent. Interstitial lung disease represents the major serious manifestation, with reported prevalence of 10–52%, while usual interstitial pneumonia is associated with greater progression and poorer prognosis. Functional abnormalities may occur in 30–49% of patients despite limited respiratory symptoms, and high-resolution computed tomography detects abnormalities substantially more frequently than conventional radiography. Male sex, age 50–60 years, smoking, rheumatoid nodules, and high rheumatoid factor or anti-CCP titers identify patients with increased pulmonary risk. Because respiratory disease may precede joint manifestations in 10–20%, systematic pulmonary assessment is clinically justified. Regular lung-function testing and high-resolution computed tomography are essential for early detection and monitoring.

References.

1. Ziyadullaev, S. K., Sultonov, I. I., Dushanova, G. A., & Akbarovna, K. S. (2021). The Effectiveness Of Pharmacotherapy For Dmards With Ra Depending On The C3435t Polymorphism Of The Mdr1 Gene. *Int. J. of Aquatic Science*, *12*(3), 2908-2916.
2. Islomovich, S. I. (2024). GENDER CHARACTERISTICS OF THE CURRENT RHEUMATOID ARTHRITIS. *International journal of medical sciences*, *4*(10), 3-8.
3. Ilkhom, S. (2023). CAJAM–VOLUME 1. ISSUE 1. 2023. *Central Asian Journal of Advanced Medicine*, *1*(01), 16-19.
4. Kireev, V. V., Sultonov, I. I., Ziyadulaaev, S. K., Suyarov, A. A., Aripova, T. U., Usmanbekova, K. T., & Nasretdinova, M. T. (2021). Genetic Engineered Preparations-An Innovative Approach in the Treatment of Rheumatoid Arthritis. *Annals of the Romanian Society for Cell Biology*, *25*(3), 4114-4119.