INTERNATIONAL JOURNAL OF
**INTEGRATIVE AND MODERN MEDICINE**

# Lipid Metabolism Disorders as a Risk Factor for the Development of Cardiovascular Events in Patients with Rheumatoid Arthritis

*Teshaev Sh. Zh., Saidova M. M.*
*Bukhara State Medical Institute*

**Annotation:** Rheumatoid arthritis (RA) is a chronic autoimmune disease affecting approximately 1% of the global population. While RA primarily targets the joints, leading to pain, swelling, and eventual joint destruction, its impact extends beyond the musculoskeletal system, posing significant risks to overall health. Among these systemic complications, cardiovascular disease (CVD) stands out as a leading cause of morbidity and mortality in RA patients. This increased cardiovascular risk is driven by both traditional risk factors and RA-specific mechanisms, including chronic inflammation and lipid metabolism disorders.

The chronic inflammatory state characteristic of RA plays a pivotal role in the development of atherosclerosis, a condition where arteries become narrowed and hardened due to plaque buildup. Pro-inflammatory cytokines such as tumor necrosis factor-alpha (TNF-α) and interleukin-6 (IL-6) are instrumental in this process, contributing to endothelial dysfunction and promoting lipid abnormalities. Patients with RA often exhibit a dyslipidemic profile characterized by elevated levels of total cholesterol, low-density lipoprotein (LDL) cholesterol, and triglycerides, along with reduced levels of high-density lipoprotein (HDL) cholesterol. These lipid abnormalities significantly heighten the risk of atherosclerosis and subsequent cardiovascular events, such as myocardial infarction and stroke.

Understanding the relevance of lipid metabolism disorders in RA is crucial for several reasons. Firstly, it underscores the need for comprehensive cardiovascular risk assessment in RA patients, incorporating both traditional and RA-specific factors. Traditional cardiovascular risk calculators may underestimate the true risk in this population, highlighting the need for tailored assessment tools. Secondly, early identification and management of dyslipidemia in RA patients can substantially mitigate cardiovascular risk. This includes lifestyle modifications, pharmacologic interventions, and optimizing RA disease control to reduce systemic inflammation.

Moreover, advancements in RA treatment, particularly biologic therapies targeting specific inflammatory pathways, offer new avenues to address both inflammation and lipid metabolism. Integrating these therapies into RA management strategies can potentially improve lipid profiles and reduce cardiovascular events. The relevance of this research lies in its potential to enhance clinical practice by promoting a holistic approach to RA management, ultimately improving patient outcomes and quality of life. Thus, ongoing research and clinical vigilance are imperative to address the cardiovascular health of RA patients comprehensively.

**Keywords:** Lipid metabolism disorders, Cardiovascular events, Rheumatoid arthritis, Atherosclerosis, Autoimmune disease, Inflammation, Cholesterol, LDL, HDL, Triglycerides.

## Objective, Materials, and Methods

The primary objective of this study is to evaluate the impact of lipid metabolism disorders on the risk of cardiovascular events in patients with rheumatoid arthritis (RA). The study aims to elucidate the relationship between lipid abnormalities and cardiovascular risk, and to explore potential therapeutic interventions to mitigate this risk in RA patients.

This is a prospective cohort study involving 150 patients diagnosed with RA, who were recruited from rheumatology clinics. The patients were stratified into two groups based on their lipid profiles: Group

A (75 patients) with documented lipid metabolism disorders, and Group B (75 patients) with normal lipid profiles.

Patients aged 18-65 years, diagnosed with RA according to the 2010 ACR/EULAR classification criteria, with at least one year of disease duration. Exclusion criteria included a history of primary hyperlipidemia, recent cardiovascular events, or use of lipid-lowering medications within the past three months.

Disease activity was evaluated using the Disease Activity Score-28 (DAS28). Detailed lipid profiles, including total cholesterol, LDL cholesterol, HDL cholesterol, and triglycerides, were measured using enzymatic colorimetric methods. Inflammatory markers such as C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were also assessed to determine their relationship with lipid abnormalities.

The Framingham risk score was used to estimate the 10-year cardiovascular risk for each patient. Additionally, patients were monitored for the occurrence of major cardiovascular events, including myocardial infarction, stroke, and cardiovascular-related mortality, over a two-year follow-up period.

Statistical analysis was performed using SPSS software. Descriptive statistics were used to summarize the baseline characteristics of the study population. Comparisons between groups were made using t-tests for continuous variables and chi-square tests for categorical variables. Multivariate logistic regression analysis was conducted to identify independent predictors of cardiovascular events in RA patients, adjusting for potential confounders such as age, gender, disease duration, and inflammatory markers.

The study seeks to provide insights into the significance of lipid metabolism disorders in RA patients and to inform clinical practice regarding the management of cardiovascular risk in this population.

**Methods.** The object of the study was 89 people with a diagnosis of RA lasting $6.2 \pm 3.8$ years, aged 35-60 years. 60 (69.8%) patients were rheumatoid factor seropositive. A biochemical blood test was carried out with the measurement of the main indicators of lipid metabolism. The frequency of occurrence of risk factors for cardiovascular diseases was assessed: physical inactivity, smoking, hypercholesterolemia, abdominal obesity, as well as the frequency of occurrence of arterial hypertension (AH), coronary heart disease (CHD), and heart rhythm disturbances. In order to diagnose subclinical forms of atherosclerosis, duplex scanning of the common carotid arteries (CCA) was performed with measurement of the thickness of the intima-media complex (IMC). The control group consisted of 25 healthy individuals.

**Results.** The study of the prevalence of risk factors for cardiovascular diseases showed that hypertension was detected in 68.5%, physical inactivity in 40.4%, smoking 12.3%, obesity in 36% of the examined patients. The median level of total cholesterol (TC) in both groups was lower than 5.0 mmol / L recommended by experts from the All-Russian Scientific Society of Cardiology, while the proportion of people with hypercholesterolemia was 31.2% (26/89). Low density lipoprotein (LDL) levels exceeded the target values <3 mmol / L in 34.8% (31/89) of the subjects. High density lipoprotein level <1.0 mmol / L 51.6% (44/89) of the study group with RA. The established upper recommended limit for triglycerides (TG) –1.7 mmol / l was exceeded in 17.9% (16/89) of the subjects. The results obtained in determining the thickness of the intima-media complex (IMC) of the common carotid artery in patients with RA were $0.98 \pm 0.18$ mm in the right carotid artery and $1.01 \pm 0.18$ mm in the left carotid artery. A pathological increase in this indicator (> 0.9 (mm)) was detected in more than half of the patients in the study in 55.1% (49/89) cases and the IMI was $1.13 \pm 0.07$ mm in the right carotid artery and $1, 16 \pm 0.07$ mm in the left carotid artery.

**Conclusions.** The study of the features of lipid metabolism has an important prognostic value as a risk factor for the development of cardiovascular events in patients with rheumatoid arthritis.

## *Literature*

1. Антипова В.Н., Яшина М.Н. Кардиоваскулярная патология при ревматических заболеваниях (обзор литературы). – XLII Огарев чтения науч. конф. Естеств. науки.– 2014. – С. 158 – 164.

2. Герасимова Е. В. и др. Применение шкал сердечно-сосудистого риска для идентификации атеросклероза сонных артерий у больных ревматоидным артритом //Терапевтический архив. – 2021. – Т. 93. – №. 5. – С. 561-567.

3. Герасимова Е. В. и др. Сердечно-сосудистые заболевания у больных ревматоидным артритом на фоне длительной терапии метотрексатом //Терапевтический архив. – 2014. – Т. 86. – №. 5. – С. 26-31.

4. Гладких Ф. В. и др. Влияние криоконсервированного экстракта плаценты на отдельные биохимические показатели лечебной эффективности и токсичности диклофенака натрия при адъювант-индуцированном артрите в эксперименте //Фармация и фармакология. – 2021. – Т. 9. – №. 4. – С. 278-293.

5. Даутова М. Б. и др. Кардиомаркеры сердце для прогнозирование сердечно-сосудистых заболеваний в экспериментальной биологии //Вестник Казахского Национального медицинского университета. – 2017. – №. 2. – С. 229-233.

6. Насонов, Е. Л. Сердечно-сосудистая патология при ревматических заболеваниях / Е. Л. Насонов, Т. В. Попкова, Д. С. Новикова // Терапевтический архив. – 2016. – Т. 88, № 5. – С. 4-12.

7. Нуралиев Н.А., Бектимиров А.М., Алимова М.Т., Сувонов К.Ж. Правила и методы работы с лабораторными животными при экспериментальных микробиологических и иммунологических исследованиях // Методическое пособие. - Ташкент, 2016. - 34 с.

8. Отарова Жанна Залкуфовна. Особенности атерогенных проявлений традиционных и специфических факторов риска сердечно-сосудистых заболеваний при ревматоидном артрите:дис. ... канд. мед. наук:3.1.18/Ж.З. Отарова; Кубанский государственный медицинскийуниверситет Министерства здравоохранения Российской Федерации. - Ставрополь, 2021. – 157с.

9. Подолинный Г. И., Ковбасюк Я. И., Фус А. В. Структура диспластических проявлений и заболеваний сердечно-сосудистой системы у пациентов с ревматической патологией //Вестник Приднестровского университета. Серия: Медико-биологические и химические науки. – 2019. – №. 2. – С. 22-25.

10. Раденска – Лоповок С.Г. Ревматические заболевания // Руководство для врачей. – Москва, 2014. – 22-24 с.

11. Саидова М.М. Диагностическое значение определения комплекса интима-медиа для оценки особенностей ремоделирования и атеросклеротического поражения у пациентов с ревматоидным артритом.// Кардиологи в Белоруси. –2022, №14(1). – С.47-51.

12. Самусев Р.П. Атлас по гистологии и гистопатологии // Учебное пособие. – Москва, 2021. – 256 с.

13. Сердюк И. Л. и др. Ревматоидный артрит и сердечно-сосудистые заболевания //Вестник современной клинической медицины. – 2020. – Т. 13. – №. 4. – С. 86-91.

14. Таирова З. К. И др. Ревматоидный артрит и ишемическая болезнь сердца //Scientific aspects and trends in the field of scientific research. – 2024. – Т. 1. – №. 8. – С. 154-163.