

RELATIONSHIP BETWEEN BLOOD LIPID PROFILE AND THE RISK OF CORONARY HEART DISEASE AMONG THE POPULATION OF THE REPUBLIC OF KARAKALPAKSTAN

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Summary: Coronary heart disease (CHD) remains the leading cause of mortality worldwide. Disorders of lipid metabolism play a central role in the development of atherosclerosis and subsequent ischemic myocardial damage. The population of the Republic of Karakalpakstan is characterized by specific environmental, nutritional, and socio-economic conditions that may influence lipid profile and cardiovascular risk. This article analyzes current data on the association between lipid parameters and CHD risk, highlights regional features, and discusses the importance of early laboratory screening for dyslipidemia.

Keywords: Coronary heart disease; lipid profile; dyslipidemia; Republic of Karakalpakstan; risk factors.

Cardiovascular diseases account for more than 30% of all deaths globally, and coronary heart disease is their most prevalent form [1]. Numerous epidemiological studies have demonstrated that elevated levels of total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), and triglycerides (TG), as well as reduced high-density lipoprotein cholesterol (HDL-C) are major predictors of CHD [2].

The Republic of Karakalpakstan is an ecologically vulnerable region affected by the Aral Sea crisis. Chronic exposure to environmental pollutants, high salinity of drinking water, and nutritional imbalance contribute to metabolic disorders, including dyslipidemia [3]. However, regional studies assessing the relationship between lipid profile and CHD risk remain limited.

Pathophysiological Basis of Lipid Disorders in CHD

Atherosclerosis is initiated by endothelial dysfunction and accumulation of LDL-C in the vascular wall. Oxidized LDL particles trigger inflammatory reactions, macrophage activation, and formation of atherosclerotic plaques [4]. Reduced HDL-C impairs reverse cholesterol transport and enhances oxidative stress [5].

Hypertriglyceridemia is associated with increased production of small dense LDL particles, which are more atherogenic [6]. Therefore, comprehensive assessment of lipid fractions is essential for risk stratification.

Regional Factors Affecting Lipid Profile in Karakalpakstan

Several factors may influence lipid metabolism among the population of Karakalpakstan:

- Nutritional habits. Diet rich in animal fats and low intake of fresh vegetables is common in rural areas [7].
- Environmental exposure. Heavy metals and pesticide residues may disrupt hepatic lipid regulation [8].
- Socio-economic stress. Chronic stress is associated with increased TG and decreased HDL-C [9].
- Genetic predisposition. Ethnic особенности may affect expression of genes regulating lipid transport [10].

These conditions create a background for early development of CHD even in relatively young individuals.

Clinical Significance of Lipid Screening

International guidelines recommend lipid profile testing for all adults over 40 years and for younger individuals with risk factors [11]. Target values for high-risk patients include:

- LDL-C < 1.8 mmol/L,
- TC < 4.5 mmol/L,
- TG < 1.7 mmol/L,
- HDL-C > 1.0 mmol/L in men and >1.2 mmol/L in women [12].

Early detection of dyslipidemia allows timely lifestyle modification and pharmacological therapy, primarily with statins [13].

Results of Regional Observations

Preliminary studies conducted in medical institutions of Nukus showed that more than 46% of examined adults had elevated LDL-C, and 38% had low HDL-C [14]. Among patients with verified CHD, combined dyslipidemia was detected in 71% of cases [15].

A strong correlation was observed between LDL-C level and severity of

coronary artery stenosis ($r=0.62$) [16]. These findings confirm the decisive role of lipid disorders in CHD development in the region.

Discussion

The data indicate that dyslipidemia is one of the most modifiable risk factors for CHD in Karakalpakstan. Considering regional specifics, population-based screening programs should be integrated into primary healthcare. Educational campaigns on healthy nutrition and reduction of trans-fat consumption are required [17].

Implementation of standardized laboratory algorithms and creation of regional lipid registry would improve risk prediction and treatment monitoring [18].

Conclusion

Disorders of blood lipid profile are highly prevalent among the population of Karakalpakstan.

Elevated LDL-C and reduced HDL-C are closely associated with CHD risk.

Early laboratory screening and preventive interventions must become a priority of regional healthcare policy.

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Rezume: Maqolada Qoraqalpog‘iston aholisi orasida lipid almashinuvi buzilishlarining yurak ishemik kasalligi rivojlanishidagi o‘rni tahlil qilingan. LDL miqdorining oshishi va HDL ning pasayishi asosiy xavf omillari ekani ko‘rsatilgan. Hududning ekologik va ijtimoiy xususiyatlari inobatga olingan. Erta laborator skrining va profilaktika dasturlarining ahamiyati asoslab berilgan.