THE INFLUENCE OF LIPID PROFILE INDICATORS ON THE DEVELOPMENT OF IN-STENT RESTENOSY AFTER INTRACRANIAL STENTING.

Sharipova Surayyo Komilovna
Master of Science in Laboratory Work, Tashkent State Medical University

The global burden of disease is changing markedly due to rising urbanization, economic growth, and an aging population. Coronary heart disease (CHD) has become a major public health concern and remains one of the leading causes of mortality worldwide, affecting populations in both developed and developing countries.

Treatment strategies for CHD generally focus on two key approaches: relieving severe coronary artery narrowing and managing the underlying risk factors that contribute to disease progression. Percutaneous coronary intervention (PCI), including stent placement, is an effective technique primarily targeting local vascular lesions. However, because atherosclerosis is a systemic condition, comprehensive postoperative management is essential. Percutaneous coronary intervention (PCI) has become one of the most effective and widely applied methods for revascularization in patients with obstructive coronary artery disease (CAD).

The introduction of drug-eluting stents (DES), which release antiproliferative agents such as sirolimus, everolimus, and paclitaxel, has substantially improved PCI outcomes by inhibiting vascular smooth muscle cell proliferation. Large randomized clinical trials have demonstrated that DES outperform bare-metal stents in achieving target vessel or lesion revascularization.Despite these advances, in-stent restenosis (ISR) and related complications persist in 5–25% of cases, making the early identification of high-risk patients a critical research priority.ISR arises from complex pathophysiological mechanisms.

The primary process involves stent-induced vascular injury, which triggers fibroblast proliferation and neointimal hyperplasia (NIH), thereby activating vascular repair. This response is influenced not only by inflammation and hypersensitivity but also by patient-specific biological factors, anatomical characteristics, procedural technique, and stent properties.Additionally, lipid metabolism represents a key modifiable risk factor for ISR development. Dysregulated lipid profiles promote neointimal hyperplasia, accelerate atherosclerosis, enhance inflammatory responses, and induce endothelial dysfunction, collectively contributing to ISR progression.

Intracranial angioplasty and stenting are important treatment options when optimal medical therapy is not effective. However, the risk of in-stent restenosis (ISR) after this intervention is high, with an incidence of up to 30%.According to scientific studies, lowering low-density lipoprotein cholesterol (LDL-C) improves clinical outcomes in patients with intracranial and extracranial arterial stenosis. In addition, statins are important in reducing the risk of cardiovascular events in patients undergoing carotid revascularization.Recent studies have confirmed the influence of lipid profile parameters on the development of restenosis after carotid endarterectomy or stenting. In particular, the ratios of total cholesterol (TC)/LDL-C and LDL-C/high-density lipoprotein cholesterol

(HDL-C) are important prognostic indicators in assessing the risk of cardiovascular disease.However, the impact of lipid profile parameters on the effectiveness of revascularization and the development of ISR after intracranial stenting has not been sufficiently studied. In this regard, the aim of this study was to determine the relationship between LDL-C, HDL-C levels, TC/HDL-C and LDL-C/HDL-C ratios after statin therapy and the development of ISR in patients who underwent intracranial stenting.

The relationship between changes in lipid profile parameters and the development of ISR during the 12-month follow-up was also evaluated. The results obtained are of great importance in improving treatment strategies after intracranial stenting.

REFERENCES:

1. Benjamin EJ, Muntner P, Alonso A, et al. Heart Disease and Stroke Statistics—2019 Update: A Report From the American Heart Association. Circulation. 2019;139:e56–e528.

2. Roth GA, Mensah GA, Johnson CO, et al. Global Burden of Cardiovascular Diseases and Risk Factors, 1990–2019: Update From the GBD 2019 Study. J Am Coll Cardiol. 2020;76:2982–3021.

3. Libby P, Ridker PM, Hansson GK. Inflammation in Atherosclerosis: From Pathophysiology to Practice. J Am Coll Cardiol. 2009;54:2129–2138.

4. Levine GN, Bates ER, Blankenship JC, et al. 2011 ACCF/AHA/SCAI Guideline for Percutaneous Coronary Intervention. Circulation. 2011;124:e574–e651.