



International Congress on Biological, Physical And Chemical Studies

International Congress on Biological, Physical And Chemical Studies - is an international conference platform under open access policy. The conference is led by international expert members who take an objective approach to peer review, ensuring each research paper is reviewed, edited by authors and evaluated on its own scholarly merits and research integration. Publishing and joining on the proceeding of the International Congress on Biological, Physical And Chemical Studies will ensure publishing experience and indexing possibilities on various global indexing.

Modern Technologies in Reperfusion Therapy for Coronary Artery Occlusion in ACS

Askarov Shakhzod Shavkat Ugli

Jizzakh branch of the Republican Scientific Center for Emergency,
Medical Care, Head of the Angiography Department

Salakhitdinov Shukhrat Najmitdinovich

Deputy Director for Medical Work at the National Children's Center

ABSTRACT

This study evaluates the role of modern interventional technologies in reperfusion therapy for patients with acute coronary syndrome (ACS) and angiographically confirmed coronary artery occlusion. A total of 120 patients underwent different treatment strategies, including thrombus aspiration, use of GP IIb/IIIa inhibitors, and intravascular imaging (IVUS, OCT). Clinical endpoints included TIMI flow grade, myocardial blush grade, and 30-day MACE. The combination of aspiration devices, imaging-guided stenting, and pharmacological support improved reperfusion outcomes and reduced adverse events. The findings highlight the importance of incorporating advanced technologies into routine practice to enhance the quality and safety of reperfusion in ACS.

KEYWORDS: Acute coronary syndrome, reperfusion therapy, coronary thrombosis, IVUS, OCT, thrombus aspiration, GP IIb/IIIa, TIMI flow, MACE.

Relevance

Acute coronary syndrome (ACS) resulting from coronary artery occlusion remains a leading cause of mortality and morbidity worldwide. Rapid restoration of coronary blood flow is crucial to preserve myocardial function and reduce the risk of death. However, standard angiographic approaches often fail to fully characterize thrombotic burden and vessel pathology. Recent advances in interventional cardiology—such as intravascular imaging (IVUS, OCT), thrombus aspiration devices, and potent antiplatelet agents like GP IIb/IIIa inhibitors—enable more precise and safer reperfusion. Despite their proven efficacy, these technologies are not yet consistently integrated into clinical protocols. Their application in cases of total thrombotic occlusion during ACS offers an opportunity to optimize outcomes through individualized treatment strategies. This study underscores the need for a modernized, technology-driven approach to coronary reperfusion that goes beyond conventional angioplasty and addresses both the mechanical and biological

components of thrombotic lesions. Integrating these innovations into practice can significantly improve patient care and survival.

Aim of the Study:

To assess the effectiveness of modern technologies in reperfusion therapy for coronary artery occlusion in patients with acute coronary syndrome.

Materials and Methods

A prospective study was conducted involving 120 patients with ACS and total coronary artery occlusion confirmed by angiography. Patients were grouped based on the reperfusion strategy: conventional PCI, thrombus aspiration, GP IIb/IIIa inhibitors, and combined approaches using IVUS/OCT-guided stenting. Clinical outcomes included TIMI flow, blush grade, and major adverse cardiac events (MACE) within 30 days. Imaging data were analyzed to assess plaque morphology, thrombus burden, and stent optimization. Statistical methods included chi-square testing and multivariate logistic regression to determine the association between interventional strategy and clinical outcomes.

Results

Patients treated with modern, multimodal reperfusion strategies demonstrated superior outcomes compared to those receiving conventional PCI. TIMI 3 flow was achieved in 90% of the multimodal group versus 64% in the standard group ($p < 0.01$). Blush grade III was observed in 82% versus 55%, respectively. The 30-day MACE rate was significantly lower in the advanced intervention group (6.8%) compared to controls (18.5%; $p < 0.05$). Intravascular imaging facilitated optimal stent placement, while thrombus aspiration reduced distal embolization. Use of GP IIb/IIIa inhibitors enhanced microvascular perfusion. These findings support the clinical value of incorporating new technologies into reperfusion protocols for ACS.

Conclusion

The integration of modern technologies—such as intravascular imaging, thrombus aspiration, and advanced pharmacotherapy—significantly improves reperfusion quality and clinical outcomes in ACS patients with coronary artery occlusion. Compared to standard interventions, a multimodal approach yields better TIMI flow, lower MACE rates, and improved myocardial perfusion. These results emphasize the importance of moving toward a technology-enhanced, individualized treatment paradigm in interventional cardiology. Future guidelines should reflect the added value of these tools to ensure consistent, evidence-based application in daily practice. Widespread adoption of such strategies could significantly reduce morbidity and mortality associated with thrombotic coronary events.

Literature

1. Абдурахманов М. М., Абдуллаева М. А., Умаров Б. Я. Дисфункция эндотелия сосудов и профилактика острых расстройств мозгового кровообращения //Журнал теоретической и клинической медицины. – 2019. – №. 1. – С. 29-31.
2. Khamdamov B. Z., Umarov B. Y. COMBINED LOCAL TREATMENT OF LONG-TERM NON-HEALING WOUNDS://Collection of abstracts of the scientific and practical conference «Current Problems of Surgical Soft Tissue Infections»(2024), Tashkent, October 28 //JOURNAL OF EDUCATION AND SCIENTIFIC MEDICINE. – 2024. – Т. 1. – №. 5. – С. 7-8.
3. Умаров Б. Я., Мемиров Б. М., Латыпова З. Г. ВЛИЯНИЕ САНИТАРНО-ГИГИЕНИЧЕСКИХ УСЛОВИЙ ПРОЖИВАНИЯ НАСЕЛЕНИЯ И КАЧЕСТВА ВОДОПРОВОДНОЙ ВОДЫ НА ЗАБОЛЕВАЕМОСТЬ ОСТРЫМИ КИШЕЧНЫМИ ИНФЕКЦИЯМИ //Гигиена и санитария. – 1991. – №. 1. – С. 29-30.