Volume 4, Issue 5, May 2026 ISSN (E): 2938-3765

APPLICATION OF INTRACARDIAC ECHOCARDIOGRAPHY TO MONITOR HEMODYNAMICS IN ANGIOGRAPHY

Qobiljonova Shaxnoza Rustamovna,
Muxiddinova Jasmina Oybekovna
Tashkent State Medical University,
Alfraganus University Tashkent, Uzbekistan

Abstract
Intracardiac echocardiography (ICE) is a modern imaging technique that enables detailed monitoring of hemodynamic parameters during angiographic interventions. ICE provides real-time imaging, improves the accuracy of assessment of intracardiac structures and cardiac function, and helps reduce the risk of complications during invasive procedures. This paper examines the potential of intracardiac echocardiography for hemodynamic assessment during angiography, its diagnostic value, and its impact on the effectiveness of endovascular interventions.

Keywords: Intracardiac echocardiography, hemodynamics, angiography, interventional cardiology, monitoring, endovascular interventions, cardiac imaging, ICE, cardiovascular system.

Introduction

The aim of the study was to evaluate the effectiveness of intracardiac echocardiography for hemodynamic monitoring during angiographic studies and interventional procedures.

Study objectives: To evaluate the diagnostic capabilities of intracardiac echocardiography during angiography. To study the impact of ICE on real-time hemodynamic monitoring. To compare the effectiveness of ICE with traditional imaging and hemodynamic monitoring methods. To determine the role of intracardiac echocardiography in preventing complications during angiographic interventions. To analyze the clinical significance of using ICE to improve the safety and accuracy of endovascular procedures.

Research methods. The study utilized clinical, instrumental, and analytical methods. Data from patients undergoing angiographic and endovascular interventions using intracardiac echocardiography were analyzed. Hemodynamic parameters, visualization of intracardiac structures, procedural accuracy, and complication rates were assessed. Comparative and correlational analysis methods were used for statistical processing of the results.

Study results. The study found that the use of intracardiac echocardiography (ICE) during angiographic and interventional procedures significantly improves the quality of visualization of intracardiac structures and provides more accurate monitoring of hemodynamic parameters in real

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

time. ICE enabled timely detection of changes in intracardiac pressure, blood flow patterns, and the functional state of the heart valves. It was noted that the use of intracardiac echocardiography contributes to increased accuracy in the positioning of catheters and instruments during interventions, thereby reducing the risk of damage to blood vessels and cardiac structures. Patients examined using ICE experienced a reduced incidence of intraoperative complications and a reduction in procedure time compared to traditional monitoring methods. The data also demonstrated that intracardiac echocardiography reduces radiation exposure by reducing the need for lengthy fluoroscopy. The high information yield of this method facilitated more effective clinical decision-making during angiographic procedures.

The need for using intracardiac echocardiography for diagnosis, prognosis, and evaluation of the effectiveness of surgical and therapeutic treatment of patients with cardiovascular pathology has been developed and proven. Intracardiac echocardiography is a highly informative method that allows for the assessment of the anatomical structures of the heart and blood vessels in real time (for more than 24 hours), calculation of the dynamics of end-systolic and end-diastolic volumes of the ventricles and cardiac performance with analysis of hemodynamic parameters of the systemic and pulmonary circulation. Intracardiac echocardiography in patients with congenital and acquired heart defects, coronary artery disease, and dilated Cardiomyopathy provides an accurate and complete picture of the underlying anatomy and hemodynamics, which influences the choice of surgical treatment strategy. Intracardiac echocardiography in the early postoperative period allows for a highly accurate assessment of the adequacy of surgical correction of cardiac pathology. Intracardiac echocardiography significantly simplifies standard endoscopic surgical treatment methods: insertion of a screw-in pacemaker electrode in previously operated patients, radiofrequency ablation of the pulmonary vein orifices, and percutaneous closure of atrial septal defects.

Conclusions

Intracardiac echocardiography is a highly effective method for visualizing and monitoring hemodynamics during angiographic examinations and endovascular interventions. The use of ICE provides detailed information on the state of intracardiac structures and hemodynamic parameters in real time. The use of intracardiac echocardiography improves the accuracy of interventional procedures and helps reduce the risk of complications. This method reduces the duration of radiographic monitoring and reduces radiation exposure for the patient and medical staff. Incorporating ICE into angiographic monitoring improves the safety, diagnostic value, and effectiveness of interventional cardiac procedures.

References

1. Rustamovna, Q. S. (2025). A MODERN VIEW OF THE PROBLEM OF CARDIOVASCULAR DISEASES IN WOMEN.
2. Yuldasheva, F. U., & Imamova, A. O. (2022). The role of sports in the formation of a healthy lifestyle among young people. European International Journal of Multidisciplinary Research and Management Studies, 2(11), 85-89.
3. Закирова, М.Р. (2024). Интраназальная иммунотерапия аллергического ринита.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

4. Закирова, М.Р. (2024). Растворимые формы мембранных белков клеток иммунной системы при бронхиальной астме у детей.
5. Кобилжонова, Ш. Р. (2024). КЛИНИЧЕСКИЕ И МОРФОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ГАСТРОДУОДЕНИТА У ДЕТЕЙ С СОЛЕНЫМ ДИАТЕЗОМ.
6. Кобилжонова, Ш. Р., & Садуллаева, Х. А. (2021). IMPACTS OF THE ENVIRONM ENT ON HUMAN HEALTH.
7. КОБИЛЖОНОВА, Ш. Р., ХАМИДУЛЛАЕВА, С. Ш., & АЗИЗОВА, О. Д. (2023). Установление сезонной динамики и корреляционных связей уровней загрязнений атмосферного воздуха в различных зонах.
8. КОБИЛЖОНОВА, Ш., ЗИЯЕВА, И., & АЗИЗОВА, О. (2023). Лечение больных гастроинтестинальной пищевой аллергией и реабилитация детей на поликлиническом этапе наблюдения.
9. Маликов, QSRMM (2024). Ишемическая болезнь сердца и рак.
10. Миррахимова, М. Х., Садуллаева, Х. А., & Кобилжонова, Ш. Р. (2022). Значение экологических факторов при бронхиальной астме у детей (Doctoral dissertation, Россия).
11. Саломова Ф.И., С.Г. (2024). Влияние факторов окружающей среды на распространенность аллергических заболеваний.
12. Саломова ФИ, К. Ш. (2024). Факторы риска аллергических заболеваний у детей дошкольного возраста.
13. Саломова, Ф. И., & Кобилжонова, Ш. Р. (2023). Оценка эффективности диетотерапии при пищевой аллергии у детей в различные возрастные периоды. Вестник ТМА SPECIAL ISSUE Dedicated to The 10th International Symposium On Important Problems of the Environmental Protection and Human Health.
14. Саломова, Ф. И., & Кобилжонова, Ш. Р. (2026). ФАКТИЧЕСКОЕ ПИТАНИЕ ДЕТЕЙ С ОЦЕНКОЙ БИОЛОГИЧЕСКОЙ И ПИЩЕВОЙ ЦЕННОСТИ РАЦИОНОВ У АЛЛЕРГИЧЕСКИХ ДЕТЕЙ ДОШКОЛЬНОГО ВОЗРАСТА. Медицинский журнал молодых ученых, (17 (03)), 384-389.
15. Саломова, Ф. И., Кобилжонова, Ш. Р., & Юлдашева, Ш. П. (2026). Journal of Healthcare and Life-Science Research.
16. Саломова, Ф. И., Садуллаева, Х. А., Кобилжонова, Ш. Р., & Гаибназаров, С. С. (2022). Генные модификации при аллергических заболеваниях и действие их на детей.
17. Axmedova, P. B. (2025). Adenotomy in children with allergic rhinitis and bronchial asthma. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(3), 459-466.
18. Durdona, Q. S. R. O. T. (2024). THE CURRENT STATE OF THE PROBLEM OF SEVERE ACUTE PANCREATITIS.
19. Imamova, A. (2023). FEATURES AND PROSPECTS OF THE DEVELOPMENT OF CHILDREN'S NUTRITION IN THE PRESCHOOL INSTITUTION.
20. Kobiljonova, S. R., Jalolov, N. N., Sharipova, S. A., & Mirsagatova, M. R. (2022). SPECTRUM OF CAUSE-SIGNIFICANT ALLERGENS CAUSING POLYNOSIS IN CHILDREN.
21. Malikov, Q. S. R. M. M. (2024). DISEASES OF THE POPULATION FROM THE LEVEL OF AIR POLLUTION IN REGIONAL CONDITIONS.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5

22. Mirrahimova, M. X., Kohiljonova, S. R., & Sadullayevna, X. A. (2022). PREVALENCE AND RISK FACTORS OF ALLERGIC DISEASE IN CHILDREN.
23. Khakimova, D., Sh, K., & Salomova, F. (2023, May). Results of hygiene assessment of food of school students. International Scientific-Practical Conference "Only English: Advances in Medical Research and Practice Conference".
24. Salomova FI, Q. S. R. (2024, February). STIMULATION OF THE IMMUNE RESPONSE BY CYTOKINE PREPARATIONS AND THEIR STANDARDIZATION. Europen youth innovation society conference volume 1№.
25. Саломова, Ф. И., & Кобилжонова, Ш. Р. (2024, March). РАЗРАБОТКА СИСТЕМНЫХ АЛГОРИТМОВ СНИЖЕНИЯ АЛЛЕРГИЧЕСКИХ ЗАБОЛЕВАНИЙ. Международный форум «ANaMed Forum–New Generation 2025» Алматы: КазНМУ, 2025.
26. Саломова, Ф. И., & Кобилжонова, Ш. Р. (2024, May). ФАКТОРЫ РИСКА РАЗВИТИЯ АЛЛЕРГИИ У ДЕТЕЙ. Международный форум «ANaMed Forum–New Generation 2025» Алматы: КазНМУ, 2025.-С. 1154-1155.

Web of Medicine: Journal of Medicine, Practice and Nursing
webofjournals.com/index.php/5