

CR
R
JOURNAL
OF CARDIORESPIRATORY RESEARCH

ISSN 2181-0974
DOI 10.26739/2181-0974
Impact Factor SJIF 2022: 5.937

Journal of
CARDIORESPIRATORY
RESEARCH



Volume 6, Issue 4

2025

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ
РЕСПУБЛИКИ УЗБЕКИСТАН

Журнал кардиореспираторных исследований

JOURNAL OF CARDIORESPIRATORY RESEARCH

Главный редактор: Э.Н.ТАШКЕНБАЕВА

Учредитель:

Самаркандский государственный
медицинский университет

Tadqiqot.uz

Ежеквартальный
научно–практический
журнал

ISSN: 2181-0974
DOI: 10.26739/2181-0974



N° 4
2025

Главный редактор:

Ташкенбаева Элеонора Негматовна

доктор медицинских наук, профессор, заведующая кафедрой внутренних болезней и кардиологии №2 Самаркандского Государственного медицинского университета, председатель Ассоциации терапевтов Самаркандской области.
<https://orcid.org/0000-0001-5705-4972>

Заместитель главного редактора:

Хайбулина Зарина Руслановна

*доктор медицинских наук, руководитель отдела биохимии с группой микробиологии
ГУ «РСНПМЦХ им. акад. В. Вахидова» <https://orcid.org/0000-0002-9942-2910>*

ЧЛЕНЫ РЕДАКЦИОННОЙ КОЛЛЕГИИ:

Аляви Анис Лютфуллаевич

академик АН РУз, доктор медицинских наук, профессор, Председатель Ассоциации Терапевтов Узбекистана, Советник директора Республиканского специализированного научно-практического центра терапии и медицинской реабилитации (Ташкент)
<https://orcid.org/0000-0002-0933-4993>

Бокерия Лео Антонович

академик РАН, доктор медицинских наук, профессор, Президент научного центра сердечно-сосудистой хирургии им. А.Н. Бакулева (Москва), <https://orcid.org/0000-0002-6180-2619>

Курбанов Равшанбек Давлетович

академик АН РУз, доктор медицинских наук, профессор, Советник директора Республиканского специализированного научно-практического медицинского центра кардиологии (Ташкент), <https://orcid.org/0000-0001-7309-2071>

Шкляев Алексей Евгеньевич

д.м.н., профессор, ректор Федерального государственного бюджетного образовательного учреждения высшего образования «Ижевская государственная медицинская академия» Министерства здравоохранения Российской Федерации

Michał Tendera

профессор кафедры кардиологии Верхнесилезского кардиологического центра, Силезский медицинский университет в Катовице, Польша (Польша)
<https://orcid.org/0000-0002-0812-6113>

Покушалов Евгений Анатольевич

доктор медицинских наук, профессор, заместитель генерального директора по науке и развитию сети клиник «Центр новых медицинских технологий» (ЦНМТ), (Новосибирск), <https://orcid.org/0000-0002-2560-5167>

Зуфаров Миржамол Мирмуратович

доктор медицинских наук, профессор, руководитель отдела ГУ «РСНПМЦХ им. акад. В. Вахидова» <https://orcid.org/0000-0003-4822-3193>

Акилов Хабибулла Атауллаевич

доктор медицинских наук, профессор, Директор Центра развития профессиональной квалификации медицинских работников (Ташкент)

Насирова Зарина Акбаровна

DSc, доцент кафедры внутренних болезней и кардиологии №2 Самаркандского Государственного Медицинского университета (ответственный секретарь) ORCID: 0000-0002-8722-0393 (ответственный секретарь)

Ризаев Жасур Алимджанович

доктор медицинских наук, профессор, Ректор Самаркандского государственного медицинского университета, <https://orcid.org/0000-0001-5468-9403>

Зиядуллаев Шухрат Худойбердиевич

доктор медицинских наук, профессор, заместитель директора по научной работе института иммунологии и геномики человека АН РУз <https://orcid.org/0000-0002-9309-3933>

Джан Ковак

Профессор, председатель Совета Европейского общества кардиологов по инсульту, руководитель специализированной кардиологии, заведующий отделением кардиологии, кардио- и торакальной хирургии, консультант-кардиолог, больница Гленфилд, Лестер (Великобритания)

Сергио Бернардини

Профессор клинической биохимии и клинической молекулярной биологии, главный врач отдела лабораторной медицины, больница Университета Тор Вергата (Рим, Италия)

Ливерко Ирина Владимировна

доктор медицинских наук, профессор, заместитель директора по науке Республиканского специализированного научно-практического медицинского центра фтизиатрии и пульмонологии Республики Узбекистан (Ташкент)
<https://orcid.org/0000-0003-0059-9183>

Цурко Владимир Викторович

доктор медицинских наук, профессор Первого Московского государственного медицинского университета им. И.М. Сеченова (Москва)
<https://orcid.org/0000-0001-8040-3704>

Тригулова Раиса Хусаиновна

Доктор медицинских наук, руководитель лаборатории превентивной кардиологии, ведущий научный сотрудник лаборатории ИБС и атеросклероза. Республиканский специализированный научно-практический медицинский центр кардиологии (Ташкент)
ORCID- 0000-0003-4339-0670

Тураев Феруз Фатхуллаевич

доктор медицинских наук, Директор Республиканского специализированного научно-практического медицинского центра эндокринологии имени академика Ю.Г. Туракулова

Bosh muharrir:

Tashkenbayeva Eleonora Negmatovna

tibbiyot fanlari doktori, professor, Samarqand davlat tibbiyot universiteti 2-sonli ichki kasalliklar va kardiologiya kafedrasini mudiri, Samarqand viloyati vrachlar uyushmasi raisi
<https://orcid.org/0000-0001-5705-4972>

Bosh muharrir o'rinbosari:

Xaibulina Zarina Ruslanovna

tibbiyot fanlari doktori, "akad V. Vohidov nomidagi RIJM davlat institutining mikrobiologiya guruhi bilan biokimyo kafedrasini mudiri" <https://orcid.org/0000-0002-9942-2910>

TAHRIRIYAT A'ZOLARI:

Alyavi Anis Lyutfullayevich

O'zbekiston Respublikasi Fanlar akademiyasining akademigi, tibbiyot fanlari doktori, professor, O'zbekiston Terapevtlar uyushmasi raisi, Respublika ixtisoslashtirilgan ilmiy va amaliy tibbiy terapiya markazi va tibbiy reabilitatsiya direktori maslahatchisi (Toshkent), <https://orcid.org/0000-0002-0933-4993>

Bockeria Leo Antonovich

Rossiya fanlar akademiyasining akademigi, tibbiyot fanlari doktori, professor, A.N. Bakuleva nomidagi yurak-qon tomir jarrohligi ilmiy markazi prezidenti (Moskva)
<https://orcid.org/0000-0002-6180-2619>

Kurbanov Ravshanbek Davlatovich

O'zbekiston Respublikasi Fanlar akademiyasining akademigi, tibbiyot fanlari doktori, professor, Respublika ixtisoslashtirilgan kardiologiya ilmiy-amaliy tibbiyot markazining direktori maslahatchisi (Toshkent)
<https://orcid.org/0000-0001-7309-2071>

Shklyayev Aleksey Evgenievich

Tibbiyot fanlari doktori, professor, Rossiya Federatsiyasi Sog'liqni saqlash vazirligining "Izhevsk davlat tibbiyot akademiyasi" Federal davlat byudjeti oliy ta'lim muassasasi rektori

Mixal Tendera

Katovitsadagi Sileziya Tibbiyot Universiteti, Yuqori Sileziya Kardiologiya Markazi kardiologiya kafedrasini professori (Polsha)
<https://orcid.org/0000-0002-0812-6113>

Pokushalov Evgeniy Anatolevich

tibbiyot fanlari doktori, professor, "Yangi tibbiy texnologiyalar markazi" (YTTM) klinik tarmog'ining ilmiy ishlar va rivojlanish bo'yicha bosh direktorining o'rinbosari (Novosibirsk) <https://orcid.org/0000-0002-2560-5167>

Zufarov Mirjamol Mirumarovich

tibbiyot fanlari doktori, professor, "akad V. Vohidov nomidagi RIJM davlat muassasasi" bo'limi boshlig'i" <https://orcid.org/0000-0003-4822-3193>

Akilov Xabibulla Ataulayevich

tibbiyot fanlari doktori, professor, Tibbiyot xodimlarining kasbiy malakasini oshirish markazi direktori (Toshkent)

Nasirova Zarina Akbarovna

Samarqand davlat tibbiyot universiteti 2-sonli ichki kasalliklar va kardiologiya kafedrasini dotsenti, DSc (mas'ul kotib) ORCID: 0000-0002-8722-0393 (mas'ul kotib)

Rizayev Jasur Alimjanovich

tibbiyot fanlari doktori, professor, Samarqand davlat tibbiyot universiteti rektori
<https://orcid.org/0000-0001-5468-9403>

Ziyadullayev Shuxrat Xudoyberdiyevich

tibbiyot fanlari doktori, professor, O'zbekiston Respublikasi Fanlar akademiyasi Immunologiya va inson genomikasi instituti ilmiy ishlar bo'yicha direktor o'rinbosari (Toshkent) <https://orcid.org/0000-0002-9309-3933>

Jan Kovak

Yevropa kardiologiya jamiyati insult kengashi raisi, 2017 yildan buyon ixtisoslashtirilgan kardiologiya kafedrasini rahbari, kardiologiya, yurak va torakal jarrohlik kafedrasini mudiri, maslahatchi kardiolog Glenfild kasalxonasi, Lester (Buyuk Britaniya)

Sergio Bernardini

Klinik biokimyo va klinik molekulyar biologiya bo'yicha professor - Laboratoriya tibbiyoti bo'limi bosh shifokori – Tor Vergata universiteti kasalxonasi (Rim-Italiya)

Liverko Irina Vladimirovna

tibbiyot fanlari doktori, professor, Respublika ixtisoslashtirilgan fiziologiya va pulmonologiya ilmiy-amaliy tibbiyot markazining ilmiy ishlar bo'yicha direktor o'rinbosari (Toshkent)
<https://orcid.org/0000-0003-0059-9183>

Surko Vladimir Viktorovich

tibbiyot fanlar doktori, professori I.M. Sechenov nomidagi Birinchi Moskva Davlat tibbiyot universiteti (Moskva)
<https://orcid.org/0000-0001-8040-3704>

Trigulova Raisa Xusainovna

Tibbiyot fanlari doktori, Profilaktik kardiologiya laboratoriyasi mudiri, YuIK va ateroskleroz laboratoriyasining yetakchi ilmiy xodimi. Respublika ixtisoslashtirilgan kardiologiya ilmiy-amaliy tibbiyot markazi (Toshkent) ORCID- 0000-0003-4339-0670

Turayev Feruz Fatxullayevich

tibbiyot fanlari doktori, akademik Y.X.To'raqulov nomidagi Respublika ixtisoslashtirilgan endokrinologiya ilmiy amaliy tibbiyot markazi direktori
<https://orcid.org/0000-0002-1321-4732>

Chief Editor:

Tashkenbaeva Eleonora Negmatovna

Doctor of Medical Sciences, professor, Head of the Department of Internal Diseases and cardiology No. 2 of the Samarkand State Medical University, Chairman of the Association of Physicians of the Samarkand Region. <https://orcid.org/0000-0001-5705-4972>

Deputy Chief Editor:

Xaibulina Zarina Ruslanovna

Doctor of Medical Sciences, Head of the Department of Biochemistry with the Microbiology Group of the State Institution "RSSC named after acad. V. Vakhidov", <https://orcid.org/0000-0002-9942-2910>

MEMBERS OF THE EDITORIAL BOARD:

Alyavi Anis Lutfullaevich

Academician of the Academy of Sciences of the Republic of Uzbekistan, Doctor of Medical Sciences, Professor, Chairman of the Association of Physicians of Uzbekistan, Advisor to the Director of the Republican Specialized Scientific - Practical Center of Therapy and Medical Rehabilitation (Tashkent) <https://orcid.org/0000-0002-0933-4993>

Bockeria Leo Antonovich

Academician of the Russian Academy of Sciences, Doctor of Medical Sciences, Professor, President of the Scientific Center for Cardiovascular Surgery named after A.N. Bakuleva (Moscow) <https://orcid.org/0000-0002-6180-2619>

Kurbanov Ravshanbek Davletovich

Academician of the Academy of Sciences of the Republic of Uzbekistan, Doctor of Medical Sciences, Professor, Advisor to the Director Republican Specialized Scientific and Practical Medical Center of Cardiology, (Tashkent) <https://orcid.org/0000-0001-7309-2071>

Shklyayev Aleksey Evgenievich

Doctor of Medical Sciences, Professor, Rector of the Federal State Budgetary Educational Institution of Higher Education "Izhevsk State Medical Academy" of the Ministry of Health of the Russian Federation

Michal Tendera

Professor of the Department of Cardiology, Upper Silesian Cardiology Center, Silesian Medical University in Katowice, Poland (Poland) <https://orcid.org/0000-0002-0812-6113>

Pokushalov Evgeny Anatolyevich

Doctor of Medical Sciences, Professor, Deputy Director General for Science and Development of the Clinic Network "Center for New Medical Technologies" (CNMT), (Novosibirsk) <https://orcid.org/0000-0002-2560-5167>

Akilov Xabibulla Ataullovich

Doctor of Medical Sciences, Professor, Center for the development of professional qualifications of medical workers (Tashkent)

Nasyrova Zarina Akbarovna

DSc, Associate Professor of the Department of Internal Diseases and cardiology No. 2 of the Samarkand State Medical University (Executive Secretary) ORCID: 0000-0002-8722-0393 (Executive Secretary)

Rizaev Jasur Alimjanovich

Doctor of Medical Sciences, Professor, Rector of the Samarkand State Medical University <https://orcid.org/0000-0001-5468-9403>

Ziyadullaev Shuhrat Khudoyberdievich

Doctor of Medical Sciences, Professor, Deputy Director for Scientific Work of the Institute of Human Genomics Immunology of the Academy of Sciences of the Republic of Uzbekistan. <https://orcid.org/0000-0002-9309-3933>

Jan Kovac

Professor Chairman, European Society of Cardiology Council for Stroke, Lead of Specialised Cardiology, Head of Cardiology, Cardiac and Thoracic Surgery, Consultant Cardiologist, Glenfield Hospital, Leicester (United Kingdom)

Sergio Bernardini

Full Professor in Clinical Biochemistry and Clinical Molecular Biology -Head Physician of the Laboratory Medicine Unit- University of Tor Vergata Hospital (Rome-Italy)

Liverko Irina Vladimirovna

Doctor of Medical Sciences, Professor, Deputy Director for Science of the Republican Specialized Scientific and Practical Medical Center for Phthiology and Pulmonology of the Republic of Uzbekistan (Tashkent) <https://orcid.org/0000-0003-0059-9183>

Zufarov Mirjamol Mirumarovich

Doctor of Medical Sciences, Professor, Head of the Department of the State Institution "RSNPMTSH named after acad. V. Vakhidov" <https://orcid.org/0000-0003-4822-3193>

Tsurko Vladimir Viktorovich

Doctor of Medical Sciences, professor Of Moscow State Medical University by name I.M. Sechenov (Moscow) <https://orcid.org/0000-0001-8040-3704>

Trigulova Raisa Khusainovna

Doctor of Medical Sciences, Head of the Laboratory of Preventive Cardiology, Leading Researcher of the Laboratory of IHD and Atherosclerosis. Republican Specialized Scientific and Practical Medical Center of Cardiology (Tashkent) ORCID- 0000-0003-4339-0670

Turaev Feruz Fatxullaevich

Doctor of Medical Sciences, Director of the Republican Specialized Scientific and Practical Medical Center of Endocrinology named after Academician Yu.G. Turakulova

Алимов Дониёр Анварович
доктор медицинских наук, директор
Республиканского научного центра
экстренной медицинской помощи

Янгиев Бахтиёр Ахмедович
кандидат медицинских наук,
директор Самаркандского филиала
Республиканского научного центра
экстренной медицинской помощи

Абдуллаев Акбар Хатамович
доктор медицинских наук, главный
научный сотрудник Республиканского
специализированного научно-
практического центра медицинской
терапии и реабилитации
<https://orcid.org/0000-0002-1766-4458>

Агабабян Ирина Рубеновна
кандидат медицинских наук, доцент,
заведующая кафедрой терапии ФПДО,
Самаркандского Государственного
медицинского института

Алиева Нигора Рустамовна
доктор медицинских наук, заведующая
кафедрой Госпитальной педиатрии №1
с основами нетрадиционной медицины
ТашПМИ

Исмаилова Адолат Абдурахимовна
доктор медицинских наук, профессор,
заведующая лабораторией
фундаментальной иммунологии
Института иммунологии геномики
человека АН РУз

Камалов Зайнитдин Сайфутдинович
доктор медицинских наук, профессор,
заведующий лабораторией
иммунорегуляции Института
иммунологии и геномики
человека АН РУз

Каюмов Улугбек Каримович
доктор медицинских наук, профессор,
заведующий кафедрой внутренних
болезней и телемедицины Центра
развития профессиональной
квалификации медицинских работников

Хусинова Шоира Акбаровна
кандидат философских наук, доцент,
заведующая кафедрой общей практики,
семейной медицины ФПДО
Самаркандского Государственного
медицинского института

Шодиккулова Гуландом Зикрияевна
д.м.н., профессор, заведующая
кафедрой внутренних болезней № 3
Самаркандского Государственного
Медицинского Института
(Самарканд)
<https://orcid.org/0000-0003-2679-1296>

Alimov Doniyor Anvarovich
tibbiyot fanlari doktori, Respublika
shoshilinch tibbiy yordam ilmiy
markazi direktori (Toshkent)

Yangiyev Baxtiyor Axmedovich
tibbiyot fanlari nomzodi,
Respublika shoshilinch tibbiy
yordam ilmiy markazining
Samarqand filiali direktori

Abdullayev Akbar Xatamovich
tibbiyot fanlari doktori, O'zbekiston
Respublikasi Sog'liqni saqlash
vazirligining "Respublika
ixtisoslashtirilgan terapiya va tibbiy
reabilitatsiya ilmiy-amaliy
tibbiyot markazi" davlat
muassasasi bosh ilmiy xodimi
<https://orcid.org/0000-0002-1766-4458>

Agababayan Irina Rubenovna
tibbiyot fanlari nomzodi, dotsent,
DKTF, terapiya kafedrasini mudiri,
Samarqand davlat tibbiyot instituti

Alieva Nigora Rustamovna
tibbiyot fanlari doktori, 1-sonli
gospital pediatriya kafedrasini mudiri,
ToshPTI

Ismoilova Adolat Abduraximovna
tibbiyot fanlari doktori, professor,
O'zbekiston Respublikasi Fanlar
akademiyasining Odam genomikasi
immunologiyasi institutining
fundamental immunologiya
laboratoriyasining mudiri

Kamalov Zaynitdin Sayfutdinovich
tibbiyot fanlari doktori, professor,
O'zbekiston Respublikasi Fanlar
akademiyasining Immunologiya va
inson genomikasi institutining
Immunogenetika laboratoriyasi mudiri

Qayumov Ulug'bek Karimovich
tibbiyot fanlari doktori, professor,
Tibbiyot xodimlarining kasbiy
malakasini oshirish markazi, ichki
kasalliklar va teletibbiyot kafedrasini
mudiri (Toshkent)

Xusinova Shoira Akbarovna
tibbiyot fanlari nomzodi, dotsent,
Samarqand davlat tibbiyot instituti
DKTF Umumiy amaliyot va oilaviy
tibbiyot kafedrasini mudiri (Samarqand)

Shodikulova Gulandom Zikriyayevna
tibbiyot fanlari doktori, professor,
Samarqand davlat tibbiyot instituti 3-
ichki kasalliklar kafedrasini mudiri
(Samarqand)
<https://orcid.org/0000-0003-2679-1296>

Alimov Doniyor Anvarovich
Doctor of Medical Sciences, Director of
the Republican Scientific Center of
Emergency Medical Care

Yangiev Bakhtiyor Axmedovich
PhD, Director of Samarkand branch of
the Republican Scientific Center of
Emergency Medical Care

Abdullaev Akbar Xatamovich
Doctor of Medical Sciences,
Chief Researcher of the State Institution
"Republican Specialized Scientific and
Practical Medical Center for Therapy and
Medical Rehabilitation" of the Ministry of
Health of the Republic of Uzbekistan,
<https://orcid.org/0000-0002-1766-4458>

Agababayan Irina Rubenovna
PhD, Associate Professor, Head of the
Department of Therapy, FAGE,
Samarkand State Medical Institute

Alieva Nigora Rustamovna
Doctor of Medical Sciences, Head of the
Department of Hospital Pediatrics
No. 1 with the basics of alternative
medicine, TashPMI

Ismailova Adolat Abduraximovna
doctor of Medical Sciences, Professor,
Head of the Laboratory of Fundamental
Immunology of the Institute of
Immunology of Human
Genomics of the Academy of Sciences
of the Republic of Uzbekistan

Kamalov Zainitdin Sayfutdinovich
doctor of Medical Sciences, Professor,
Head of the Laboratory of
Immunogenetics of the Institute of
Immunology and Human Genomics
of the Academy of Sciences of the
Republic of Uzbekistan

Kayumov Ulugbek Karimovich
Doctor of Medical Sciences, Professor,
Head of the Department of Internal
Diseases and Telemedicine of the Center
for the development of professional
qualifications
of medical workers

Khusinova Shoira Akbarovna
PhD, Associate Professor, Head of the
Department of General Practice,
Family Medicine FAGE of the
Samarkand State Medical Institute

Shodikulova Gulandom Zikriyayevna
Doctor of Medical Sciences, professor,
head of the Department of Internal
Diseases N 3 of Samarkand state medical
institute (Samarkand)
<https://orcid.org/0000-0003-2679-1296>

Халиков Каххор Мирзаевич
кандидат медицинских наук, доцент
заведующий кафедрой биологической
химии Самаркандского
государственного медицинского
университета

Аннаев Музаффар
Ассистент кафедры внутренних
болезней и кардиологии №2
Самаркандского государственного
медицинского университета
(технический секретарь)

Тулабаева Гавхар Миракбаровна
Заведующая кафедрой кардиологии,
Центр развития профессиональной
квалификации медицинских
работников, д.м.н., профессор

**Абдумаджидов Хамидулла
Амануллаевич**
Бухарский государственный
медицинский институт имени Абу
Али ибн Сино. Кафедра «Хирургические
болезни и реанимация». Доктор
медицинских наук, профессор.

Саидов Максуд Арифович
к.м.н., директор Самаркандского
областного отделения
Республиканского специализированного
научно-практического медицинского
центра кардиологии (г. Самарканд)

Срождинова Нигора Зайнутдиновна
д.м.н. Заведующая научно-
исследовательской лабораторией
кардиодиабета и метаболических
нарушений РСНПМЦК

Xalikov Qaxxor Mirzayevich
Tibbiyot fanlari nomzodi, dotsent
Samarqand davlat tibbiyot universiteti
Biologik kimyo kafedrasini mudiri

Annayev Muzaffar G'iyos o'g'li
Samarqand davlat tibbiyot universiteti 2-son
ichki kasalliklar va kardiologiya kafedrasini
assistenti (texnik kotib)

Tulabayeva Gavxar Mirakbarovna
kardiologiya kafedrasini mudiri, tibbiyot
xodimlarining kasbiy malakasini rivojlantirish
markazi, tibbiyot fanlari doktori, professor

Abdumadjidov Xamidulla Amanullayevich
«Abu Ali ibn Sino nomidagi Buxoro davlat
tibbiyot oliygohi» Xirurgiya kasalliklari va
reanimatsiya kafedrasini proffessori, tibbiyot
fanlari doktori.

Saidov Maqsud Arifovich
tibbiyot fanlari nomzodi,
Respublika ixtisoslashgan kardiologiya
ilmiy amaliy tibbiyot markazi Samarqand
viloyat mintaqaviy filiali direktori
(Samarqand)

Srojidinova Nigora Zaynutdinovna
t.f.d. Kardiodiabet va metabolik buzilishlar
ilmiy tadqiqot laboratoriyasi mudiri

Khalikov Kakhor Mirzayevich
Candidate of Medical Sciences,
Associate Professor, Head of the Department
of Biological Chemistry, Samarkand State
Medical University

Annaev Muzaffar
Assistant of the Department of Internal
Diseases and Cardiology No. 2 of the
Samarkand State Medical University
(technical secretary)

Tulabayeva Gavkhar Mirakbarovna
Head of the Department of Cardiology,
Development Center professional
qualification of medical workers,
MD, professor

**Abdumadjidov Khamidulla
Amanullayevich**
“Bukhara state medical institute named
after Abu Ali ibn Sino”. DSc, professor.

Saidov Maksud Arifovich
Candidate of Medical Sciences, Director
of the Samarkand Regional Department of
the Republican Specialized Scientific and
Practical Medical Center of Cardiology
(Samarkand)

Srojidinova Nigora Zaynutdinovna
DSc, Head of Kardiodiabetes and Metabolic
Disorders Laboratory

Обзорные статьи | Review articles | Adabiyotlar sharhi

1. **Атаева М.С., Каюмова Ш.Ш.**
Острый ларинготрахеит у детей: современный взгляд на эпидемиологию, диагностику и лечение
Ataeva M.S., Kayumova Sh.Sh.
Acute laryngotracheitis in children: a contemporary view on epidemiology, diagnosis, and treatment
Ataeva M.S., Kayumova Sh.Sh.
Bolalarda oʻtkir laringotraxeit: epidemiologiya, diagnostika va davolashga zamonaviy yondashuv..... 11
2. **Маджидова Г. Т., Жумаева С.Т.**
Синдром Дауна и сердечно-сосудистая патология: клиническое наблюдение и обзор литературы
Madjidova G.T., Jumayeva S.T.
Down syndrome and cardiovascular pathology: clinical observation and literature review
Madjidova G.T., Jumayeva S.T.
Daun sindromi va yurak-qon tomir patologiyasi: klinik kuzatish va adabiyotlarni koʻrib chiqish..... 14
3. **Маджидова Г. Т., Д.Б.Нормаматов**
Система лечения больных с острым коронарным синдромом
Madjidova G.T., D.B. Normamatov
About the system of treatment of patients with acute coronary syndrome
Madjidova G.T., Normamatov D.B.
Oʻtkir koronar sindromli bemorlarni davolash tizimi haqida..... 19
4. **Хайдарова Г.А., Тригулова Р.Х., Алиева А.В.**
Патогенез и клиническое значение кардиоваскулярной автономной нейропатии
Khaydarova G.A., Trigulova R.Kh., Alieva A.V.
Pathogenesis and clinical significance of cardiovascular autonomic neuropathy
Xaydarova G.A., Trigulova R.X., Alieva A.V.
Kardiovaskulyar avtonom neyropatiyaning patogenezi va klinik ahamiyati..... 23
5. **Халимзода Л.М., Ливерко И.В.**
Лейкоцитарно-гематологические индексы при хобл: их связь с клиническим профилем и прогностическими исходами
Khalimzoda L.M., Liverko I.V.
Leukocyte-hematological indices in copd: their association with the clinical profile and prognostic outcomes
Xalimzoda L.M., Liverko I.V.
Surunkali obstruktiv oʻpka kasalligida (OʻSOK) leykotsitar-gematologik indekslar: ularning klinik profili va prognoz natijalari bilan bogʻliqligi..... 27

Оригинальные статьи | Original articles | Original maqolalar

6. **Бекметова Ф.М., Фозилов Х.Г., Бекбулатова Р.Ш., Дониёров Ш.Н., Хошимов Ш.У., Каримов Б.С.**
Хроническая сердечная недостаточность ишемического генеза: особенности ремоделирования миокарда по данным спекл-трекинг эхокардиографического исследования
Bekmetova F.M., Fozilov Kh.G., Bekbulatova R.Sh., Doniyorov Sh.N., Khoshimov Sh.U., Karimov B.S.
Myocardial remodeling in chronic ischemic heart failure: insights from speckle-tracking echocardiography
Bekmetova F.M., Fozilov X.G., Bekbulatova R.Sh., Doniyorov Sh.N., Xoshimov Sh.U., Karimov B.S.
Surunkali ishemik yurak etishmovchiligida miokardning remodellaniish xususiyatlari: spekl-treking exokardiografiya natijalar..... 33
7. **Гадаев А.Г., Ризаев Ж.А., Хусинова Ш.А.**
Сравнительное изучение приверженности к лечению и факторов риска среди сельского, районного и городского населения с хроническими заболеваниями сердечно-сосудистой и дыхательной систем (на примере самаркандской области)
Gadayev A.G., Rizaev J.A., Khusinova Sh.A.
Comparative study of adherence to treatment and risk factors among the rural heart-vascular and respiratory system diseases of the rural population of village, district, and city. (in the example of Samarkand region)
Gadayev A.G., Rizaev J.A., Xusinova Sh.A.
Surunkali yurak-qon tomir va nafas tizimi kasalliklari mavjud qishloq, tuman va shahar aholisi orasida davolanishga moyillik va xavf omillarini oʻzaro solishtirma oʻrganish (Samarqand viloyati misolida)..... 41

8. **Джураева Н.М., Икрамов А.И., Хайбуллина З.Р., Абдухалимова Х.В., Турсунова Л.Б., Султанов А.Т.**
Особенности и преимущества проведения компьютерной томографии у детей с врожденными пороками сердца без седации с использованием специальных фиксирующих устройств
Djurayeva N.M., Ikramov A.I., Khaybullina Z.R., Abdukhalimova Kh.V., Tursunova L.B., Sultanov A.T.
Features and advantages of performing computed tomography in children with congenital heart defects without sedation using special fixation devices
Djurayeva N.M., Ikramov A.I., Xaybullina Z.R., Abduxalimova X.V., Tursunova L.B., Sultonov A.T.
Sedatsiyasiz, maxsus fiksatsiya moslamalaridan foydalanilgan holda tug'ma yurak nuqsonli bolalarda kompyuter tomografiyasini o'tkazishning o'ziga xosliklari va afzalliklari..... 47
9. **Ибадов Р.А., Ибрагимов С.Х.**
Острый респираторный дистресс-синдром в послеоперационном периоде кардиохирургии
Ibadov R.A., Ibragimov S.Kh.
Acute respiratory distress syndrome in the postoperative period of cardiac surgery
Ibadov R.A., Ibragimov S.X.
Yurak jarrohligidan keyingi davrda o'tkir respirator distress sindromi..... 53
10. **Маматкулова Ф.Х.**
Сочетание хронической обструктивной болезни легких и анемии и принципы лечения
Mamatkulova F.Kh.
The combination of chronic obstructive pulmonary disease and anemia and treatment principles
Mamatkulova F.X.
Surunkali obstruktiv o'pka kasalligi va kamqonlikning birga kelishi va davolash tamoyillari..... 58
11. **Маматкулова Ф.Х.**
Нарушения сна после инфаркта миокарда и инсульта у больных с тромбоцитопенией
Mamatkulova F.Kh.
Sleep disorders after myocardial infarction and stroke in patients with thrombocytopenia
Mamatkulova F.X.
Trombotsitopeniya bilan bemorlarda miokard infarkti va insultdan keyingi uyqu buzilish holatlari..... 62
12. **Налибаева Р.А., Ливерко И.В.**
Оценка клинико-фенотипических особенностей течения внебольничной пневмонии среди взрослых
Nalibaeva R.A., Liverko I.V.
Assessment of clinical and phenotypic features of community-acquired pneumonia in adults
Nalibaeva R.A., Liverko I.V.
Katta yoshli bemorlar orasida kasalxonadan tashqari zotiljamning klinik va fenotipik xususiyatlarini baholash..... 66
13. **Насырова З.А., Исмати Н.О.**
Эффективность физической кардиореабилитации у пациентов после инфаркта миокарда, перенесших чрескожное коронарное вмешательство
Nasyrova Z.A., Ismati N.O.
Efficiency of physical cardiorehabilitation in patients after myocardial infarction that have experienced transkeral coronary intervention
Nasirova Z.A., Ismati N.O.
Miokard infarktidan keyin teri orqali koronar aralashuv o'tkazilgan bemorlarda jismoniy kardioreabilitatsiya samaradorligi..... 72
14. **Носирова Д.А., Аршад Джан, Навид Ахмед, Мухаммад Тосиф Мудассар, Ашкназ Джавед**
Роль ожирения и метаболического синдрома в рецидивах фибрилляции предсердий
Nosirova D.A., Arshad Jan, Naveed Ahmed, Muhammad Toseef Mudassar, Ashknaz Javed
Role of obesity and metabolic syndrome in recurrence of atrial fibrillation
Nosirova D.A., Arshad Jan, Naveed Ahmed, Muhammad Toseef Mudassar, Ashknaz Javed
Semizlik va metabolik sindromning qaytalanuvchi bo'lmachalar fibrillyatsiyasidagi o'rni..... 77
15. **Носирова Д.А., Аршад Джан, Навид Ахмед, Мухаммад Тосиф Мудассар, Ашкназ Джавед**
Фибрилляция предсердий у пациентов моложе 40 лет: клинические характеристики и факторы риска
Nosirova D.A., Arshad Jan, Naveed Ahmed, Muhammad Toseef Mudassar, Ashknaz Javed
Atrial fibrillation in patients under 40 years of age: clinical characteristics and risk factors
Nosirova D.A., Arshad Jan, Naveed Ahmed, Muhammad Toseef Mudassar, Ashknaz Javed
40 yoshgacha bo'lgan bemorlarda bo'lmachalar fibrillyatsiyasi: klinik xususiyatlari va xavf omillari..... 82

16. **Сахно В.А.**
Эффективность использования массажа в реабилитации тяжелых пневмоний у детей
Sakhno V.A.
Effectiveness of massage in the rehabilitation of severe pneumonia in children
Saxno V.A.
Bolalarda og'ir pnevmoniyani reabilitatsiya qilishda massajning samaradorligi..... 86
17. **Сохибов Д.Д., Тригулова Р.Х., Мирахмедова Н.С.**
Регистры пациентов с инфарктом миокарда как инструмент контроля качества амбулаторной помощи: систематический обзор
Sokhibov D.D., Trigulova R. Kh., Miraxmedova N.S.
Myocardial infarction patient registries as a tool for outpatient care quality control: a systematic review
Soxibov D.D., Trigulova R.X., Miraxmedova N.S.
Miokard infarkti bilan og'rigan bemorlarning ambulatoriya yordami sifatini nazorat qilish vositasi sifatida reestrlari: tizimli sharh..... 91
18. **Турсунов Жахонгир Тожибоевич, Муминов Шовкат Кадинович**
Влияние карбоксиангиографии на липидный профиль и воспалительные маркёры у отставных военнослужащих с критической ишемией нижних конечностей и хронической болезнью почек
Jahongir Tojiboevich Tursunov, Shavkat Kadirovich Muminov
Impact of carboxyangiography on lipid profile and inflammatory markers in retired military personnel with critical limb ischemia and chronic kidney disease
Jahongir Tojiboevich Tursunov, Shavkat Qodirovich Muminov
Oyoq kritik ishemiyasi va surunkali buyrak kasalligi bo'lgan nafaqadagi harbiylarda karboxiangiografiyaning lipid profili va yallig'lanish markerlariga ta'siri..... 97
19. **Ризаев Ж.А., Асадова Г.М.**
Оценка биохимических показателей ротовой жидкости у пациентов воспалительными заболеваниями пародонта на фоне хронических заболеваний желудочно-кишечного тракта в динамике лечения
Rizaev Dj.A.Asadova G.M.
Evaluation of biochemical parameters of oral fluid in patients with inflammatory periodontal diseases against the background of chronic gastrointestinal diseases in the dynamics of treatment
Rizaev J.A. Asadova G.M.
Davolash dinamikasida surunkali oshqozon-ichak kasalliklari fonida yallig'lanishli parodontal kasalliklarga chalingan bemorlarda og'iz suyuqligining biokimyoyi..... 102

**Носирова Д.А.**

Ассистент кафедры внутренних болезней и кардиологии №2,
Самаркандский государственный медицинский университет,
Самарканд, Узбекистан

Аршад Жан

Студент 6 курса,
Факультет общей медицины,
Самаркандский государственный медицинский университет,
Самарканд, Узбекистан

Навид Ахмед

Студент 6 курса,
Факультет общей медицины,
Самаркандский государственный медицинский университет,
Самарканд, Узбекистан

Мухаммад Тосиф Мудассар

Студент 6 курса,
Факультет общей медицины,
Самаркандский государственный медицинский университет,
Самарканд, Узбекистан

Ашкназ Джавед

Студент 6 курса,
Факультет общей медицины,
Самаркандский государственный медицинский университет,
Самарканд, Узбекистан

ФИБРИЛЛЯЦИЯ ПРЕДСЕРДИЙ У ПАЦИЕНТОВ МОЛОЖЕ 40 ЛЕТ: КЛИНИЧЕСКИЕ ХАРАКТЕРИСТИКИ И ФАКТОРЫ РИСКА

For citation: Nosirova D.A., Arshad Jan, Naveed Ahmed, Muhammad Toseef Mudassar, Ashknaz Javed ATRIAL FIBRILLATION IN PATIENTS UNDER 40 YEARS OF AGE: CLINICAL CHARACTERISTICS AND RISK FACTORS. Journal of cardiorespiratory research, vol.6, issue 4.


<http://dx.doi.org/10.26739/2181-0974/2025/6/4/15>

Фибрилляция предсердий (ФП) является одной из наиболее распространённых и клинически значимых нарушений ритма сердца. Несмотря на то, что данная аритмия преимущественно встречается у лиц пожилого возраста, в последние годы наблюдается увеличение частоты ФП среди пациентов моложе 40 лет. Хотя частота встречаемости ФП в этой возрастной группе остаётся относительно низкой, её клиническое значение весьма велико из-за возможных долгосрочных сердечно-сосудистых осложнений, включая тромбоэмболию, сердечную недостаточность и инсульт.

Целью данного исследования явилось изучение клинико-гемодинамических особенностей фибрилляции предсердий у пациентов в возрасте до 40 лет, выявление ведущих факторов риска и оценка влияния метаболических и модифицируемых поведенческих детерминант на развитие и рецидивы ФП.

Nosirova D.A.

Assistant of department of Internal diseases and cardiology N2,
Samarkand state medical university
Samarkand, Uzbekistan

Arshad Jan

Student of the 6th year,
Faculty of General Medicine,
Samarkand State Medical University
Samarkand, Uzbekistan

Naveed Ahmed

Student of the 6th year,
Faculty of General Medicine,
Samarkand State Medical University
Samarkand, Uzbekistan
Muhammad Toseef Mudassar
Student of the 6th year,
Faculty of General Medicine,
Samarkand State Medical University
Samarkand, Uzbekistan
Ashknaz Javed
Student of the 6th year,
Faculty of General Medicine,
Samarkand State Medical University
Samarkand, Uzbekistan

ATRIAL FIBRILLATION IN PATIENTS UNDER 40 YEARS OF AGE: CLINICAL CHARACTERISTICS AND RISK FACTORS

ANNOTATION

Atrial fibrillation (AF) is one of the most common and clinically significant heart rhythm disorders. Despite the fact that this arrhythmia predominantly occurs in elderly people, in recent years there has been an increase in the frequency of BF among patients under 40 years of age. Although the frequency of BF in this age group remains relatively low, its clinical significance is quite high due to possible long-term cardiovascular complications, including thromboembolism, heart failure, and stroke.

The purpose of this study was to study the clinical and hemodynamic features of atrial fibrillation in patients under 40 years of age, to identify leading risk factors, and to assess the influence of metabolic and modifiable behavioral determinants on the development and recurrence of BF.

Nosirova D.A.

Ichki kasalliklar va kardiologiya kafedrası №2 assistenti,
Samarqand davlat tibbiyot universiteti,
Samarqand, O'zbekiston

Arshad Jan

6-bosqich talabasi,
Umumiy tibbiyot fakulteti,
Samarqand davlat tibbiyot universiteti,
Samarqand, O'zbekiston

Naveed Ahmed

6-bosqich talabasi,
Umumiy tibbiyot fakulteti,
Samarqand davlat tibbiyot universiteti,
Samarqand, O'zbekiston

Muhammad Toseef Mudassar

6-bosqich talabasi,
Umumiy tibbiyot fakulteti,
Samarqand davlat tibbiyot universiteti,
Samarqand, O'zbekiston

Ashknaz Javed

6-bosqich talabasi,
Umumiy tibbiyot fakulteti,
Samarqand davlat tibbiyot universiteti,
Samarqand, O'zbekiston

40 YOSHGACHA BO'LGAN BEMORLARDA BO'LMACHALAR FIBRILLYATSIYASI: KLINIK XUSUSIYATLARI VA XAVF OMILLARI

ANNOTATSIYA

Bo'lmachalar fibrillyatsiyasi (BF) eng keng tarqalgan va klinik jihatdan ahamiyatli yurak ritmining buzilishlaridan biridir. Ushbu aritmiya asosan keksa yoshdagi odamlarda uchrashiga qaramay, so'nggi yillarda 40 yoshgacha bo'lgan bemorlar orasida BF chastotasining ko'payishi kuzatilmoqda. Ushbu yosh guruhida BFning uchrash darajasi nisbatan past bo'lsa-da, tromboemboliya, yurak yetishmovchiligi va insult kabi uzoq muddatli yurak-qon tomir asoratlari tufayli uning klinik ahamiyati juda yuqori.

Ushbu tadqiqotning maqsadi 40 yoshgacha bo'lgan bemorlarda bo'lmachalar fibrillyatsiyasining klinik va gemodinamik xususiyatlarini o'rganish, yetakchi xavf omillarini aniqlash va metabolik va modifikatsiyalangan xulq-atvor determinantlarining BF rivojlanishi va qaytalanishiga ta'sirini baholashdan iborat.

Introduction: Atrial fibrillation (AF) is the most common persistent tachyarrhythmia affecting millions of people worldwide. The main peak of incidence occurs in old age; however, cases of AF among young patients are becoming more frequent. Unlike patients in older age groups, in individuals younger than 40 years, atrial fibrillation typically has a paroxysmal course and develops in the absence of pronounced structural changes in the heart.

The leading factors contributing to the development of AF in young patients are obesity, arterial hypertension, smoking, alcohol abuse,

psycho-emotional stress, and metabolic disorders (insulin resistance, dyslipidemia). In addition, inflammatory processes and early manifestations of left ventricular diastolic dysfunction play a significant role. Studying these factors is important for the timely identification of risk groups and the implementation of effective preventive measures.

The aim of the study: To study the clinical and hemodynamic features of atrial fibrillation in patients under 40 years of age, to identify leading modifiable risk factors (such as obesity, smoking, inflammation, and metabolic disorders), as well as to assess their influence on the

formation and recurrence of arrhythmias in order to develop directions for early prevention and correction of the disease.

Materials and methods: The study was observational and comparative in nature, conducted at the clinics of Samarkand State Medical University. Patients hospitalized with a diagnosis of atrial fibrillation were included in the analysis. All patients were divided into two groups: the main group - patients under 40 years of age ($n = 42$), the control group - patients 40 years and older ($n = 78$).

Results:

Table 1. Clinical characteristics of AF patients (<40 vs ≥40 years).

Parameter	<40 years ($n=42$)	%	≥40 years ($n=78$)	%	p-value
Male	30	71%	49	63%	0.33
Paroxysmal AF	34	82%	40	51%	<0.001
Hypertension	9	21%	53	68%	<0.001
Obesity (BMI ≥25)	14	33%	36	46%	0.09
Smoking	19	46%	23	29%	0.04
Diabetes	3	7%	30	39%	<0.001
Palpitations (presentation)	37	88%	52	67%	0.01
Dyspnea (presentation)	17	40%	45	58%	0.05

We compared the clinical features of patients aged <40 years ($n=42$) and ≥40 years ($n=78$). Men made up the same proportion in both groups (71% versus 63%, $p=0.33$). Paroxysmal atrial fibrillation (PAF) was significantly more common in young patients (82% versus 51%, $p<0.001$), while traditional concomitant diseases were more common in the older group. In particular, hypertension was present in 21% of patients <40 versus 68% of patients ≥40 ($p<0.001$), and diabetes was present in 7% versus 39% ($p<0.001$), respectively.

Obesity (BMI ≥25 kg/m²) was more common in elderly patients (46% versus 33%), although this difference did not reach statistical

All subjects underwent clinical and physical examination, electrocardiography (ECG), echocardiography, as well as laboratory tests (glucose, lipid profile, C-reactive protein, creatinine, etc.).

For statistical processing, methods of parametric and non-parametric statistics were used. Comparison of quantitative indicators was performed using Student's t-test, while qualitative indicators were compared using the χ^2 test. Differences were considered statistically significant at $p < 0.05$. To identify independent predictors of AF in patients under 40 years of age, the logistic regression method was applied.

significance ($p=0.09$). Current smoking was more frequently reported in the younger group (46% versus 29%, $p=0.04$). Regarding the suggested symptoms, heart palpitations were more frequent complaints according to the index in young patients (88% versus 67%, $p=0.01$), while shortness of breath was higher in elderly patients (58% versus 40%) and approached significance ($p=0.05$). young patients had a phenotype characterized by higher prevalence of paroxysmal PAF and smoking, and lower load on cardiometabolic diseases; elderly patients had more hypertension and diabetes, and they tended to have higher obesity and shortness of breath when presented.

Table 2. Independent predictors of AF in <40 age group (logistic regression).

Variable	Odds Ratio (95% CI)	Adjusted p-value	Notes
Obesity (BMI ≥25)	2.41 (1.10–5.30)	0.028	Adjusted for age and sex
Smoking	1.97 (1.03–4.12)	0.041	Current smoker vs never
Elevated CRP (>5 mg/L)	2.88 (1.27–6.52)	0.010	Marker of inflammation
Diastolic dysfunction (E/e' >12)	2.61 (1.21–5.61)	0.021	Echo evidence

In the subgroup analysis of patients under 40 years of age using a multidimensional logistic regression model, it was revealed that a number of clinical and biological factors remained independent of the presence of atrial fibrillation, even after age and gender correction in this cohort. Obesity, defined as a body mass index of 25 kg/m² and higher, was identified as a significant factor that increases the likelihood of atrial fibrillation by more than two times. This conclusion highlights the early effects of excess obesity on heart structure and electrical stability, and supports the growing recognition of obesity-associated atrial remodeling as a clinically significant substrate for arrhythmogenesis in young adults. Smoking has also emerged as an independent risk factor, with current smokers' atrial fibrillation risk being almost twice as high as those who never smoked. This association suggests the detrimental effects of tobacco-induced oxidative stress, vegetative dysfunction, and endothelial damage, which can lead to the destabilization of atrial electrophysiology even in the absence of severe cardiovascular diseases.

Markers of systemic inflammation and cardiac diastolic function were also statistically significant. Elevated C-reactive protein levels above 5 mg/l increased the risk of atrial fibrillation almost threefold,

emphasizing the role of inflammation as a biomarker and potential mechanistic factor of early atrial fibrosis, ion channel disorders, and atrial ectopy. Similarly, impaired left ventricular diastolic function, reflected by an E/e ratio greater than 12 during echocardiography, was associated with more than twice the chance of atrial fibrillation. This discovery indicates that even minor anomalies in ventricular relaxation and filling pressure can establish atrial pro-arrhythmic environment through chronic mechanical stretching and structural remodeling.

Together, these results indicate that atrial fibrillation in young people is not a purely benign or idiopathic condition, but is closely related to modifiable risk factors such as excess weight and smoking, as well as biological processes associated with low-degree inflammation and early myocardial dysfunction. These conclusions emphasize the need for early, comprehensive risk assessment and preventive measures aimed at addressing the issues of lifestyle, inflammatory status, and subclinical changes in the heart in this population.

Conclusion: The expanded clinical characteristics demonstrate that symptomatic paroxysmal AF in young adults commonly presents with palpitations, dyspnea, and chest discomfort, with identifiable triggers such as stress, alcohol use, and intense exertion. The findings reinforce

the role of modifiable risk factors obesity, smoking, metabolic abnormalities, and low-grade inflammation in facilitating early arrhythmia. Echocardiographic evidence of mild left atrial enlargement and diastolic dysfunction suggests early hemodynamic remodeling that

may be reversible with risk-factor modification. Logistic regression supports obesity, smoking, elevated CRP, and diastolic dysfunction as independent predictors of AF in this cohort. Preventive measures targeting lifestyle and metabolic health are recommended.

Список литературы/References/Iqtiboslar:

1. Soliman EZ, Lopez F, O'Neal WT et al. Atrial fibrillation and risk of ST-segment-elevation versus non-ST-segment-elevation myocardial infarction: the Atherosclerosis Risk in Communities (ARIC) Study. *Circulation*. 2015;131(21):1843–1850. <https://doi.org/10.1161/CIRCULATIONAHA.114.014145>
2. Steinberg JS, Zelenkofske S, Wong SC, et al. Value of P-wave signal-averaged ECG for predicting atrial fibrillation after cardiac surgery. *Circulation*. 2017;88:2618–2622
3. Tanigawa M, Fukatani M, Konoe A, et al. Prolonged and fractionated right atrial electrograms during sinus rhythm in patients with paroxysmal atrial fibrillation and sinus sick node syndrome. *J Am Coll Cardiol*. 2018;17:403–408.
4. Tereshchenko LG, Rizzi P, Mewton N et al. Infiltrated atrial fat characterizes underlying atrial fibrillation substrate in patients at risk as defined by the ARIC atrial fibrillation risk score. *Int J Cardiol*. 2014;172(1):196–201. <https://doi.org/10.1016/j.ijcard.2014.01.012>
5. Toh N, Kanzaki H, Nakatani S et al. Left atrial volume combined with atrial pump function identifies hypertensive patients with a history of paroxysmal atrial fibrillation. *Hypertension*. 2020;55:1150–1156. <https://doi.org/10.1161/HYPERTENSIONAHA.109.137760>
6. van Diepen S, Siha H, Fu Y et al. Do baseline atrial electrocardiographic and infarction patterns predict new-onset atrial fibrillation after ST-elevation myocardial infarction? Insights from the Assessment of Pexelizumab in Acute Myocardial Infarction Trial. *J Electrocardiol*. 2021;43(4):351–358. <https://doi.org/10.1016/j.jelectrocard.2010.04.001>
7. Vilani GQ, Piepoli M, Cripps T, et al. Atrial late potentials in patients with paroxysmal atrial fibrillation detected using a high gain, signal-averaged esophageal lead. *PACE*. 2016;17:1118–1123.
8. Villareal R, Hariharan R, Liu B, et al. Postoperative atrial fibrillation and mortality after coronary artery bypass surgery. *J Am Coll Cardiol*. 2004;43:742–748.
9. Violi F, Soliman EZ, Pignatelli P et al. Atrial fibrillation and myocardial infarction: a systematic review and appraisal of pathophysiologic mechanisms. *J Am Heart Assoc*. 2016;5(5):e003347. <https://doi.org/10.1161/JAHA.116.003347>
10. Wang J, Yang YM, Zhu J. Mechanisms of new-onset atrial fibrillation complicating acute coronary syndrome. *Herz*. 2015;40(S1):18–26. <https://doi.org/10.1007/s00059-014-4149-3>
11. Wong CX, Sullivan T, Sun MT et al. Obesity and the risk of incident, post-operative, and post-ablation atrial fibrillation: a meta-analysis of 626,603 individuals in 51 studies. *JACC Clin Electrophysiol*. 2015;1(3):139–152. <https://doi.org/10.1016/j.jacep.2015.04.004>