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CONGENITAL AND ACQUIRED SCOLIOSIS IN CHILDREN: EARLY DIAGNOSIS AND REHABILITATION

Makhmudov Boburbek Erkinovich
Fergana Medical Institute of Public Health
Assistant of the Department of Traumatology and Orthopedics

Annotation

This thesis explores modern methods for early detection, diagnosis, and rehabilitation of congenital and acquired scoliosis in children. Early intervention with comprehensive screening and evidence-based treatments improves outcomes and reduces surgery. Advanced imaging and standardized assessments enhance diagnosis, while personalized rehabilitation, orthotics, and multidisciplinary care optimize spinal function during growth.

Keywords: pediatric scoliosis, congenital scoliosis, adolescent idiopathic scoliosis, early diagnosis, rehabilitation, conservative treatment, spinal deformity, Cobb angle

Today's pediatric scoliosis is a common spinal disorder affecting 0.47% to 5.2% of children worldwide. It involves a lateral spinal curvature over 10 degrees, often with vertebral rotation. Congenital scoliosis arises from embryonic vertebral defects and worsens if untreated, while acquired scoliosis, mainly adolescent idiopathic, appears during rapid growth without clear cause. Early detection and conservative treatment are crucial, as they can slow progression, reduce surgery rates, and improve long-term outcomes.

Pediatric scoliosis pathophysiology involves complex interactions of genetic predisposition, biomechanical factors, and environmental influences during spinal development. Congenital scoliosis results from vertebral formation or segmentation failures between the fifth and eighth weeks of embryogenesis, with severity depending on the specific anomaly—hemivertebrae and unilateral unsegmented bars being the most progressive forms needing early intervention. Acquired scoliosis, especially adolescent idiopathic scoliosis, has multifactorial causes including genetic susceptibility, hormonal effects, neuromuscular control

deficits, and asymmetric growth during puberty. Modern diagnostics combine clinical assessment with advanced imaging for early detection and curve monitoring. Clinical exams evaluate spinal alignment, symmetry, trunk balance, and neurological status. The forward bending test with scoliometer offers over 85% sensitivity for detecting significant curves. Low-radiation biplanar imaging provides 3D reconstruction while reducing radiation by up to 85% compared to traditional X-rays. MRI remains essential for assessing congenital anomalies, intraspinal pathology, and skeletal maturity. Rehabilitation has evolved with evidence supporting conservative treatments. Individualized exercise therapies, such as the Schroth method and Scientific Exercise Approach to Scoliosis, improve Cobb angle, trunk symmetry, and quality of life. Orthotic bracing is key for progressive curves between 25-40 degrees; modern braces use CAD/CAM technology to optimize correction and patient compliance. Meta-analyses show about 80% success in preventing progression when braces are combined with exercise and adherence. Multidisciplinary management involves orthopedists, physiotherapists, orthotists, and psychosocial support to meet comprehensive patient needs. Early intervention includes family education, psychosocial care, and lifestyle changes to enhance treatment adherence. Surgery is reserved for severe curves (>45-50 degrees) or rapidly progressing cases despite conservative care. Growth-friendly surgical methods like growing rods and vertebral body tethering allow spinal growth while controlling deformity in young children with congenital scoliosis.

In conclusion the management of congenital and acquired scoliosis in children has improved through early detection and comprehensive rehabilitation. Systematic screening and timely conservative treatment can significantly change the progression of spinal deformities. Advanced imaging, tailored exercise therapy, and modern orthotics help optimize outcomes and reduce the need for surgery. Future research should focus on genetic biomarkers for predicting curve progression, and new conservative treatments. Successful management relies on early diagnosis, multidisciplinary care, and ongoing patient involvement during growth.

References

1. Umarovich, B. M. (2025). DEVELOPING OF VIRAL INFECTIONS IN HEMATOPOIETIC STEM-CELL TRANSPLANT (HSCT) RECIPIENTS. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(5), 468-473.
2. Muhammadiev, S. (2025). HEMIEPIPHYSIODESIS IN PEDIATRIC ORTHOPAEDICS AS A TREATMENT OF KNEE DEFORMITIES. International Journal of Artificial Intelligence, 1(4), 225-227.
3. Pulatjonovna, U. M. (2024). METABOLITE SYNDROME AND COGNITIVE IMPAIRMENT. IMRAS, 7(6), 419-423.
4. Умарова, М., & Кодиржонов, Н. (2022). ТРОМБОЛИТИЧЕСКАЯ ТЕРАПИЯ В ЛЕЧЕНИИ ИШЕМИЧЕСКОГО ИНСУЛЬТА. Theoretical aspects in the formation of pedagogical sciences, 1(5), 218-220.
5. Умарова, М. (2021). МИГРЕН КАСАЛЛИГИ ВА УНИНГ ШОШИЛИНЧ ТЕРАПИЯСИНИ ТАКОМИЛЛАШТИРИШ. ИНТЕРНАУКА, 47, 93.
6. Хошимова, А. Ё. (2018). ВЛИЯНИЕ ЗАГРЯЗНЕНИЯ ОКРУЖАЮЩЕЙ СРЕДЫ НА ЗАБОЛЕВАЕМОСТЬ БРОНХИАЛЬНОЙ АСТМОЙ. Актуальные вопросы современной пульмонологии. Ма, 200.
7. АБДУГАНИЕВА, А. Ё., & ЮЛДАШЕВА, Х. Б. К. ЛАБОРАТОРНАЯ ДИАГНОСТИКА ПРИ COVID-19. ИНТЕРНАУКА Учредители: Общество с ограниченной ответственностью" Интернаука", 37-38.
8. Умарова, М. (2021). ИНСОМНИА ВА МЕТАБОЛИК СИНДРОМНИНГ ЎЗАРО КОМОРБИДЛИГИ МУАММОНИНГ ДОЛЗАРБЛИГИ. Интернаука, (20-7), 29-30.
9. Исмаилов, С. И., & Маматханова, Г. М. (2022). ЭЛЕКТРОННЫЙ ДОКУМЕНТООБОРОТ КАК ВАЖНЕЙШИЙ ФАКТОР ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ УПРАВЛЕНИЯ ЗДРАВООХРАНЕНИЕМ. Евразийский журнал медицинских и естественных наук, 2(8), 38-45.
10. Erkinovich, M. B. (2023). Prevention and Modern Treatment of Fatty Embolism in Traumatological Patients. Eurasian Medical Research Periodical, 21, 158-164.
11. Abdujabborova, C. (2024). O'tkir zaharliligini aniqlash" LUPINUS AS". Universal xalqaro ilmiy jurnal, 1(9), 151-157.

12. Abdujabborova, C. (2024). PSORALEA DRUPACEAE BUNGE (PSORALEA KOSTYANKOVA OR AKKURAI) CHEMICAL COMPOSITION AND APPLICATION IN MEDICINE. B INTERNATIONAL BULLETIN OF MEDICAL SCIENCES AND CLINICAL RESEARCH (Т. 4, Выпуск 1, сс. 9–14). Zenodo.
13. Erkinovich, M. B. (2025, February). ACCUMULATION OF FLUID IN THE KNEE JOINT. In The Conference Hub (pp. 31-35).
14. Erkinovich, M. B. (2025). EFFECT OF JOINT FLUID ON JOINT ACTIVITY IN THE BODY. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(2), 256-260.
15. Maxmudovna, M. G., Qizi, S. M. I., & Xasanboyevich, X. S. (2024). VIRAL HEPATITIS DISEASE AND ITS SPREAD AMONG THE POPULATION. THE EXAMPLE OF RISHTAN DISTRICT. Eurasian Journal of Medical and Natural Sciences, 4(1-2), 118-121.
16. Mamatkhanova, G. M., & Ismailov, S. I. (2021). Optimization Of Medical Records And Implementation Of Electronic Systems In Healthcare. The American Journal of Medical Sciences and Pharmaceutical Research, 3(01), 193-198.
17. Маматханова, Г. (2021). Оптимизация медицинской учетной документации и внедрение электронных систем в здравоохранение. Общество и инновации, 2(8/S), 61-67.
18. Мурадимова, А. Р. (2019). Нейрофизиологический аспект метаболической терапии хронической церебральной ишемии. In Инновации в медицине. Материалы I международной научно-практической конференции-Махачкала, 2019.-Том. II.-232 с. (p. 192).
19. Lutfidin o'g'li, Y. B. (2025). ENDEMIK BUQOQ KASALLIGINI TA'SIRIDAN YO'LDOSH TERMINAL SO'RGICHLARDAGI QON TOMIRLARNING PATOMORFOLOGIK O'ZGARISHLARI. THEORY AND ANALYTICAL ASPECTS OF RECENT RESEARCH, 3(33), 322-325.
20. Lutfidin o'g'li, Y. B. (2025). Major Hystologic Types of Lung Cancer. Miasto Przyszłości, 57, 81-86.

21. Yusupov, B., & Xatamova, M. (2025). GIPERTIREOZ TA'SIRIDAN YO'LDOSH TERMINAL SO'RG'ICHLARDAGI QON TOMIRLARNING PATOMORFOLOGIK O'ZGARISHLARI. Modern Science and Research, 4(2), 432-437.
22. Habibullayevna, A. G., & Shavkatjon o'g'li, Q. S. (2025, February). STRUCTURE AND INTRACELLULAR ACTIVITY OF THE DNA-CONTAINING HERPES SIMPLEX VIRUS. In International Educators Conference (pp. 126-132).
23. Мурадимова, А. Р. (2019). КЛИНИКО-НЕВРОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ТЕЧЕНИЯ СО-СУДИСТОЙ ЭПИЛЕПСИИ, ПРОГНОЗИРОВАНИЯ И ЛЕЧЕНИЯ. In Инновации в медицине. Материалы I международной научно-практической конференции-Махачкала, 2019.-Том. II.-232 с. (p. 178).
24. Мурадимова, А. Р. (2019). КЛИНИКО-ДИАГНОСТИЧЕСКИЕ АСПЕКТЫ И СОВРЕМЕННЫЕ ПОДХОДЫ К ЛЕЧЕНИЮ СОСУДИСТОЙ ДЕМЕНЦИИ. In Инновации в медицине. Материалы I международной научно-практической конференции-Махачкала, 2019.-Том. II.-232 с. (p. 185).
25. Xojiakbarovna, K. M. (2025). SKLETAL MUSCLE RELAXANTS. PERIPHERALLY ACTING SKLETAL MUSCLE RELAXAXANTS: NEUROMUSCULAR BLOCKERS AND SYNTHETIC COMPETITIVE BLOCKERS. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(5), 509-514.
26. Yevgenevna, S. O. (2025). PREDICTION OF PREECLAMPSIA DEVELOPMENT IN PREGNANT WOMEN WITH OVERWEIGHT AND OBESITY. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(5), 561-568.
27. Solijon o'g'li, A. S. (2024). Antibiotic Therapy for Severe Infections in Infants and Children. Innovative Society: Problems, Analysis and Development Prospects (Spain), 6, 21-24.

28. Solijon o‘g‘li, A. S. (2024, May). Measles in Children, its Sympyoms and Treatment. In International Congress on Biological, Physical And Chemical Studies (ITALY) (pp. 102-106).
29. Isroilova, G. (2023). DEVELOPING THE PRINCIPLES OF STUDYING AND TREATMENT OF VAGINAL DYSBIOSIS DURING PREGNANCY. Modern Science and Research, 2(4), 52-53.
30. Юсупова, Р. Т., & Шаланкова, О. Е. (2020). РЕПРОДУКТИВНОЕ ЗДОРОВЬЕ ДЕВОЧЕК-ПОДРОСТКОВ, ПРОЖИВАЮЩИХ В УСЛОВИЯХ ФЕРГАНСКОЙ ДОЛИНЫ. In Университетская наука: взгляд в будущее (pp. 612-614).
31. Каттаханова, Р. Ю. (2022). ДИАГНОСТИКА И ТЕРАПИЯ АТОПИЧЕСКОЙ БРОНХИАЛЬНОЙ АСТМЫ, СОЧЕТАННОЙ С АЛЛЕРГИЧЕСКИМИ РИНОСИНУСИТАМИ У ДЕТЕЙ. ББК 54.11 А-380, 65.
32. Каттаханова, Р. Ю. (2019). ИННОВАЦИОННЫЕ ТЕХНОЛОГИИ В ЛЕЧЕНИИ ХЕЛИКОБАК-ТЕРНОЙ ИНФЕКЦИИ У ДЕТЕЙ. In Инновации в медицине. Материалы I международной научно-практической конференции-Махачкала, 2019.-Том. II.-232 с. (p. 33).
33. Каттаханова, Р. Ю. (2019). ПРОСТАЦИКЛИН-ТРОМБОКСАНОВАЯ СИСТЕМА И ТРОМБОЦИТАРНО-СОСУДИСТЫЙ ГЕМОСТАЗ У БОЛЬНЫХ С ОСТРЫМ КОРОНАРНЫМ СИНДРОМОМ. Евразийский кардиологический журнал, (S1), 207-208.
34. Каттаханова, Р. Ю. (2017). СОСТОЯНИЕ ПРОСТАЦИКЛИН-ТРОМБОКСАНОВОЙ СИСТЕМЫ И ФУНКЦИОНАЛЬНЫЕ СВОЙСТВА ТРОМБОЦИТОВ У БОЛЬНЫХ ИШЕМИЧЕСКОЙ БОЛЕЗНЬЮ СЕРДЦА. Актуальные научные исследования в современном мире, (2-3), 69-74.
35. Каттаханова, Р. Ю. (2018). ИСПОЛЬЗОВАНИЕ ИННОВАЦИОННЫХ ТЕХНОЛОГИЙ В ДИАГНОСТИКЕ И ЛЕЧЕ-НИИ ХЕЛИКОБАКТЕРНОЙ ИНФЕКЦИИ. Инновации в образовании и медицине. Материалы V Все, 192.

36. Пулатова, Н. С., Йигиталиев, А. Б., & Абдурашидов, А. А. ЭПИДЕМИОЛОГИЯ РАКА ТЕЛА МАТКИ В ФЕРГАНСКОЙ ОБЛАСТИ. 1-SON, 1-JILD IYUL 2022 1-QISM, 29.
37. Эгамбердиев, Д. Э., Абдурашидов, А. А., & Эргашов, У. Ш. ПРОФИЛАКТИКА И МЕТОФИЛАКТИКА МОЧЕКАМЕННОЙ БОЛЕЗНИ.
38. Husanboy, U. (2024). ACUTE HEMORRHAGIC CYSTITIS DISEASE IN CHILDREN AND ITS DEVELOPMENT IN THE CHILD'S DODY. In International Conference on Multidisciplinary Sciences and Educational Practices (pp. 88-94).
39. Умарова, М. (2021). ИНСУЛТДАН КЕЙИНГИ ТАЛВАСА СИНДРОМИ. Интернаука, (18-5), 46-48.
40. Pattoyevich, G. A. (2025). IRON DEFICIENCY ANEMIA IN CHILDREN: EARLY DIAGNOSIS AND MODERN TREATMENT APPROACHES. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(5), 494-501.
41. Ravshanovna, R. Y., & Abduxoliq o'g'li, R. A. (2024). Clinical and Morphological Characteristics and Treatment of Gaucher Disease. Miasto Przyszłości, 49, 1407-1412.