

PREVALENCE AND ANALYSIS OF TORCH INFECTIONS AMONG WOMEN OF REPRODUCTIVE AGE IN THE SAMARKAND REGION

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Abstract

This article evaluates the frequency of TORCH infections among women of reproductive age in the Samarkand region. Although no targeted epidemiological study was conducted to estimate regional prevalence, the work analyzes screening data obtained during routine laboratory testing. The results primarily reflect the serological immune response to the pathogens that form the TORCH group. The purpose of the study was to examine laboratory findings associated with TORCH markers using ELISA.

Keywords: TORCH infection, antibodies, ELISA, test system.

Introduction

TORCH infections represent a group of perinatally significant infectious diseases, including *Toxoplasma gondii*, rubella virus, cytomegalovirus, and herpes simplex virus (HSV types 1 and 2). These pathogens are clinically important because primary infection during pregnancy can cause miscarriage, intrauterine fetal death, congenital malformations, or neurological disorders in newborns.

A challenge in diagnosing TORCH infections is that in many cases they occur asymptotically or manifest with nonspecific symptoms such as low-grade fever or mild malaise (1,4,6,7). Due to the high risk of congenital infection, many countries include TORCH testing as part of mandatory prenatal screening programs (1,3,5). Laboratory detection of immunoglobulin classes IgM (acute phase infection) and IgG (previous exposure and immunity) serves as the main diagnostic method (1,2,8).

STUDY OBJECTIVE

To analyze laboratory indicators reflecting TORCH seropositivity among women of reproductive age in the Samarkand region.

MATERIALS AND METHODS

The study was based on laboratory records and outpatient cards of patients who underwent TORCH screening at the Samarkand Regional Clinical Infectious Diseases Hospital.

Total analyzed: 13,572 ELISA laboratory tests



- Patientsexamined: 1,778
- Methods used: complete blood count and ELISA (IFA) for TORCH markers
- Sampletype: bloodserum

The following antibodies were tested:

N	TORCH marker	Test type
0		
1	Toxoplasma gondii IgG	ToxIgG
2	Toxoplasma gondii IgM	ToxIgM
3	Rubellavirus IgG	RubIgG
4	Rubellavirus IgM	RubIgM
5	Cytomegalovirus IgG	CMV IgG
6	Cytomegalovirus IgM	CMV IgM
7	Herpes simplex virus type 1/2 IgG	HSV-1/2 IgG
8	Herpes simplex virus type 1/2 IgM	HSV-1/2 IgM

Most serum samples (11,553 tests) were obtained from women aged 18–43 years, reflecting the reproductive-age group. Remaining samples were from patients aged 5–17 years and 44–80 years.

RESULTS

Among all screening tests, **52.72% of results were seropositive**, indicating detection of IgM and/or IgG antibodies.

Table 1. Summary of seropositive TORCH markers

Marker	% Positive
CMV IgG	89.36%
CMV IgM	5.73%
HSV-1/2 IgG	93.21%
HSV-1/2 IgM	13.97%
Rubella IgG	90.26%
Rubella IgM	2.20%
Toxoplasma IgG	9.04%
Toxoplasma IgM	2.88%

Herpes virus and cytomegalovirus IgG antibodies dominated the positive test results — a trend consistent with global studies (2,5).

IgM antibodies were detected in significantly smaller quantities, indicating low frequency of acute infections.

Further age-distribution analysis showed:

- HSV IgM antibodies were most common among women of reproductive age
- Rubella IgM was most common in adolescents (15–17 years), corresponding to standard vaccination periods
- Toxoplasma IgM was identified in girls under 18 years old (7.27%)
- Persistent rubella IgG immunity was observed in 88.24% of school-aged girls



DISCUSSION

The results show a high level of population immunity to rubella, cytomegalovirus, and herpes simplex virus among reproductive-age women. This suggests that:

1. Many individuals had prior exposure but are not currently experiencing active infection.

The risk of primary infection during pregnancy is relatively low.

At the same time, the low Toxoplasma IgG prevalence (9.04%) indicates that most women do not have immunity against toxoplasmosis, making them vulnerable to primary infection during pregnancy, which poses a risk of congenital disease.

CONCLUSIONS

1. Serological screening is a reliable tool for diagnosing genital and perinatal infections in women of reproductive age. The minimal percentage of indeterminate results confirms the high specificity of the test systems used.

2. The mandatory TORCH screening panel should include detection of both IgM (active phase) and IgG (immunity/memory) antibodies.

3. Compared to global data, the Samarkand region shows a low prevalence of Toxoplasma gondii infection, which reduces the risk of congenital toxoplasmosis.

References:

1. Anvarovna Y. N. et al. Clinical and Epidemiological Characteristics of Shigellosis in Adults at the Contemporary Stage //Central Asian Journal of Medical and Natural Science. – 2021. – T. 2. – №. 3. – C. 311-318.
2. Anvarovna Y. N. et al. Organization of therapeutic and preventive measures to predict the development of secondary immunodeficiency in viral infections in young athletes //Journal of Positive School Psychology. – 2022. – C. 7147-7151.
3. Anvarovna, Y. N., et al. "Organization of therapeutic and preventive measures to predict the development of secondary immunodeficiency in viral infections in young athletes." Journal of Positive School Psychology (2022): 7147-7151.
4. Bakhrinov J. J. Kholmurodov Sh. F., Yakhyeva Kh. D., Kuchkorov Sh. B. The role of artificial intelligence in modern medicine //Innovations in Technology and Science Education. – 2024. – T. 2. – №. 7. – C. 464-467.
5. Bakhrinov J. J., Otakulov D. A. ugli, & Nigmatullaev, MN (2023) //Gilbert's syndrome: current insights, outcomes and therapies. Golden brain. – T. 1. – №. 16. – C. 131-135.
6. Jasurovich B. J. et al. HEPATITIS C IN PREGNANT WOMEN AND NEWBORNS //Вестник магистратуры. – 2023. – №. 7 (142). – C. 10-12.
7. Mirkhamzaevna A. M., Yakubovna E. M., Shakhobidinovna V. N. Safety Assessment of Highly Active Antiretroviral Therapy in Patients with HIV Infection //EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION. – 2022. – T. 2. – №. 1. – C. 289-292.
8. Munisa E. Polymerase chain reaction in diagnostics of an enteroviral infection at patients with implications of acute intestinal infection //European science review. – 2016. – №. 11-12. – C. 106-107.



9. Namozovich R. R. KhalimovFarzod Zafar ugli, Usmonov Islombek Akbar ugli, &KardzhavovaGulnozaAbilkasimovna.(2024) //An Integrated Approach to the Treatment of Community-Accompany Pneumonia in Children 2ith Myocarditis. EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE. – T. 4. – №. 2. – C. 84-97.
10. Namozovich R. R. Mansurov JasurChoriyorugli, SobirovOg’abek Sobir ugliugli, &Allanazarov Alisher Boymuratovich.(2024) //Acute Obstructive Bronchitis in Children: Main Etiological and Clinical Features. EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE. – T. 4. – №. 2. – C. 98-100.
11. Rakhmonov R. N. et al. HEPATITIS C: THE CURRENT STATE OF THE PROBLEM //Web of Medicine: Journal of Medicine, Practice and Nursing. – 2025. – T. 3. – №. 1. – C. 339-347.
12. Rakhmonov R. N. NEW APPROACHES TO TREATING CHRONIC VIRAL HEPATITIS B //Экономикаисоциум. – 2025. – №. 9-1 (136). – C. 284-286.
13. Rakhmonov R. N., Kh V. D. RECENT DIAGNOSTIC ADVANCEMENTS IN CHRONIC VIRAL HEPATITIS B //Экономикаисоциум. – 2025. – №. 9-1 (136). – C. 281-283.
14. Rakhmonov R. N., Zubaydullayev S. V. o ‘g ‘li, &Kardjavova, GA (2024) //ACUTE MYOCARDITIS IN CHILDREN ON THE BACKGROUND OF BRONCHO-PULMONARY DISEASES. GOLDEN BRAIN. – T. 2. – №. 3. – C. 70-75.
15. Rukhshonabonu M. et al. CLINICAL MANIFESTATION OF LENNOX-GASTAUT SYNDROME //Вестник магистратуры. – 2023. – №. 7 (142). – C. 19-21.
16. Sobirovna D. N., Zakirovna U. G., Abdualolovna S. D. Post-covid syndrome in new coronavirus infection. – 2022.
17. Tuychiev L. N. et al. Nasopharyngeal extraction of s. pneumoniae from adult patients with acute respiratory infections and antibiotic resistance of isolated strains //Art of Medicine. International Medical Scientific Journal. – 2022. – T. 2. – №. 1.
18. Yakubovna E. M. et al. Aspects of Clinical and Laboratory Diagnostics of Enteroviral Infection without CMS Damage //Central Asian Journal of Medical and Natural Science. – 2021. – T. 2. – №. 6. – C. 1-5.
19. Yarmukhamedova N. A. et al. Clinical and epidemiological aspects of neurobrucellosis according to the data of the regional Infectious clinical hospital of the city of Samarkand //Bulletin of science and education. – 2020. – №. 18-2. – C. 96.
20. Yarmukhamedova N. A. et al. Samarkand viloyati khududida bolalar va ўsmirlarda parotitli infektsiya kechishining klinik-epidemiologik xususiyatlari //Problemy biologii i meditsiny. – 2018. – №. 2. – C. 152-154.
21. Yarmukhamedova N. A., Yakubova N. S., Djuraeva K. S. Polyfocalparametersofpatientswithchronicbrucellosis //Журнал Биомедицины и практики. – T. 6. – №. 6. – C. 296-305.
22. Yarmukhammedova N. A. et al. homiladorayollardasurunkali virally hepatitis C nor clinics wa epidemiologist hususiyatlarinitahlilqilish //Problems of biology and medicine. – 2021. – №. 1.1. – C. 126.
23. Zhasurovich B. Z. OCCULT HBV INFECTION //SHOKH LIBRARY. – 2025.



24. Zhasurovich B. Z. PREGNANCY AND VIRAL HEPATITIS B //SHOKH LIBRARY. – 2025.
25. Абдиев Т. А., Сувонкулов У. Т., Куркина Т. Н. Лечение эхинококкоза и других гельминтозов //Инфекция, иммунитет и фармакология. – 1999. – Т. 4. – С. 78-84.
26. Алимова Х. П. и др. Особенности клинического течения коронавирусной инфекции у детей //Инфекция, иммунитет и фармакология. – 2021. – №. 4. – С. 34-39.
27. Ачилова М. М. БЛАСТОЦИСТ ИНВАЗИЯСИ АНИҚЛАНГАН ОИВ ИНФЕКЦИЯЛИ БЕМОРЛАРДА КАСАЛЛИКНИНГ МИКСТ КЕЧИШ ХУСУСИЯТЛАРИ // Экономика и социум. 2025. №2-1 (129).
28. Восеева Д. Х., Джумаева Н. С., Абдурахмонова З. Э. COVID-19 КАСАЛЛИГИ ДАВОСИ ВА ПРОФИЛАКТИКАСИДА D ВИТАМИНИНИНГ АҲАМИЯТИ //Биология. – 2022. – №. 1. – С. 134.
29. Джумаева Н. С., Ярмухамедова Н. А., Узакова Г. З. Амалиётдан бир холат Covid-19 касаллиги хамрох касалликлар билан кечиш хусусиятлари //Журнал гепатогастроэнтерологических исследований. – 2021.
30. Жураев Ш. А., Рустамова Ш. А., Орзикулов А. О. Клинико-эпидемиологические особенности течения паротитной инфекции у взрослых (на примере Самаркандской области) //Вопросы науки и образования. – 2020. – №. 22 (106). – С. 54-64.
31. Караматуллаева З. Э., Ибрагимова Э. Ф., Мустаева Г. Б. Роль микроэлементов при заболевании COVID-19 //International Scientific and Practical conference «COVID-19 and other topical infections of Central Asia» June 23-24, 2022, Shymkent. – С. 116.
32. Кудратова З., Кулбоев Х., Орзикулов А. Клебсиллезная инфекция кишечника у детей раннего возраста //Журнал вестник врача. – 2014. – Т. 1. – №. 1. – С. 117-118.
33. Курбонова Л. и др. Бруселлэз билан оғриган беморларда электрокардиограмманинг ўзига хос хусусиятлари //Журнал вестник врача. – 2014. – Т. 1. – №. 1. – С. 6-7.
34. Курбонова Л., Орзикулов А., Бахриева З. Бруселлэз касаллигида юрак-қон томир тизимида бўладиган ўзгаришлар //Журнал вестник врача. – 2014. – Т. 1. – №. 1. – С. 4-6.
35. Матъякубова Ф. Э., Ибрагимова Э. Ф., Бахриева З. Д. КЛИНИКО-ЭПИДЕМИОЛОГИЧЕСКАЯ ХАРАКТЕРИСТИКА ШИГЕЛЛЕЗА У ВЗРОСЛЫХ НА СОВРЕМЕННОМ ЭТАПЕ //Вестник науки и образования. – 2020. – №. 22-1 (100). – С. 64-72.
36. Матъякубова Ф. Э., Рустамова Х. Х., Муродова У. Р. ПАТОГЕНЕТИЧЕСКИЕ АСПЕКТЫ ТЕРАПИИ ХРОНИЧЕСКОГО ВИРУСНОГО ГЕПАТИТА В //Достижения науки и образования. – 2020. – №. 17 (71). – С. 86-91.

