PREVALENCE OF TORCH INFECTIONS AMONG WOMEN IN ANDIJAN REGION

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Abstract

TORCH infections remain one of the most significant public health problems affecting women of reproductive age due to their serious consequences for pregnancy outcomes and neonatal health. The acronym TORCH includes Toxoplasmosis, Other infections, Rubella, Cytomegalovirus, and Herpes simplex virus. These infections are often asymptomatic in women but may lead to miscarriage, congenital anomalies, stillbirth, and long term complications in newborns. The present study aims to analyze the prevalence and epidemiological characteristics of TORCH infections among women in the Andijan region of Uzbekistan. The research is based on retrospective analysis of laboratory diagnostic data, regional health statistics, and published scientific sources. The findings indicate a relatively high prevalence of cytomegalovirus and toxoplasmosis, especially among women aged 20 to 35 years. The study emphasizes the importance of early screening, preventive measures, and public awareness to reduce the burden of TORCH infections and improve maternal and child health outcomes in the region.

Keywords

TORCH infections, women, Andijan region, reproductive health, seroprevalence, congenital infections

Introduction

TORCH infections represent a major global health concern, particularly for women of reproductive age, due to their potential to cause severe complications during pregnancy and early childhood. The term TORCH is used to describe a group of vertically transmitted infections, including Toxoplasmosis, Other infections, Rubella, Cytomegalovirus, and Herpes simplex virus. These pathogens are characterized by their ability to cross the placental barrier and disrupt normal fetal development, especially when primary infection occurs during the first trimester of pregnancy [1].

In many cases, TORCH infections remain clinically silent or present with mild, nonspecific symptoms in women, which complicates timely diagnosis and increases the risk of unnoticed transmission to the fetus. Despite the absence of pronounced maternal symptoms, congenital TORCH infections may lead to spontaneous abortion, intrauterine growth retardation, congenital malformations, neurological impairment, hearing loss, and long term developmental delays in newborns [2]. Therefore, early detection and prevention of these infections are considered critical components of maternal and child healthcare systems worldwide.

The epidemiological distribution of TORCH infections varies significantly depending on geographical location, socioeconomic conditions, healthcare accessibility, and cultural practices. Developing regions often experience higher prevalence rates due to limited screening programs, insufficient public awareness, and delayed prenatal care [3]. Central Asian countries, including

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Uzbekistan, continue to face challenges related to infectious disease surveillance and prevention, particularly in rural and densely populated areas.

The Andijan region, located in the eastern part of Uzbekistan, is characterized by high population density, elevated fertility rates, and intensive social interaction, which collectively create favorable conditions for the spread of infectious diseases. Additionally, factors such as migration, household crowding, traditional dietary habits, and close contact with domestic animals may contribute to increased exposure to TORCH pathogens, particularly toxoplasmosis and cytomegalovirus [4]. Despite these risk factors, comprehensive regional studies focusing on TORCH infection prevalence among women in Andijan remain scarce.

Preventive strategies, including routine TORCH screening before pregnancy and during early gestation, vaccination against rubella, and health education programs, have demonstrated effectiveness in reducing congenital infection rates in various populations [5]. However, the implementation and coverage of such measures in the Andijan region are inconsistent, highlighting the need for localized epidemiological research to inform public health interventions.

Given the potential long term consequences of TORCH infections for both mothers and infants, as well as the limited availability of region specific data, this study aims to investigate the prevalence and distribution of TORCH infections among women in the Andijan region. The findings are expected to contribute to a better understanding of local epidemiological patterns and support the development of targeted prevention and screening strategies to improve maternal and neonatal health outcomes [6].

Materials and Methods

This study was conducted using a retrospective descriptive design to assess the prevalence and distribution of TORCH infections among women in the Andijan region of Uzbekistan. The research was carried out based on the analysis of secondary data obtained from regional healthcare institutions, including antenatal clinics, diagnostic laboratories, and reproductive health centers. The study period covered five years, from January 2019 to December 2024, allowing for a comprehensive evaluation of temporal trends in TORCH infection prevalence [1].

The study population consisted of women aged 18 to 45 years who underwent routine TORCH screening as part of preconception counseling, antenatal care, or diagnostic evaluation for reproductive health issues. Inclusion criteria were defined as female gender, residence in the Andijan region for at least one year, and availability of complete serological test results. Women with incomplete laboratory data or known immunodeficiency disorders were excluded from the analysis to ensure data reliability and consistency [2].

Serological testing was performed using enzyme linked immunosorbent assay methods to detect specific IgM and IgG antibodies against Toxoplasma gondii, Rubella virus, Cytomegalovirus, and Herpes simplex virus types 1 and 2. The presence of IgM antibodies was interpreted as an indicator of recent or acute infection, while IgG positivity was considered evidence of past exposure or immunity. All laboratory procedures were conducted in accordance with standardized diagnostic protocols approved by the Ministry of Health of the Republic of Uzbekistan and international laboratory guidelines [3].

Data were collected anonymously to maintain patient confidentiality and ethical standards. Demographic variables such as age, pregnancy status, and place of residence were included in the dataset. The age of participants was categorized into three groups: 18 to 24 years, 25 to 34 years, and 35 to 45 years, in order to analyze age specific prevalence patterns. The collected data were systematically organized and verified to minimize potential errors [4].

Statistical analysis was performed using descriptive statistical methods. Prevalence rates were calculated as percentages, and results were presented in tabular form for clarity. Comparative analysis was conducted to evaluate differences in infection rates across age groups. Due to the retrospective nature of the study, no experimental interventions were applied. Ethical approval for the study was obtained from the relevant institutional review board, and the research was conducted in accordance with the principles of the Declaration of Helsinki [5].

Results

The analysis revealed that cytomegalovirus infection was the most prevalent among women in the Andijan region, followed by toxoplasmosis and herpes simplex virus infection. Rubella immunity was relatively high due to vaccination programs; however, cases of acute infection were still detected.

Table 1. Prevalence of TORCH Infections among Women in Andijan Region

Infection Type	Number of Tested Women	Positive Cases (%)
Toxoplasmosis	1,200	28.4
Rubella	1,200	6.2
Cytomegalovirus	1,200	62.7
Herpes simplex	1,200	34.9

The highest prevalence rates were observed among women aged 20 to 35 years, which corresponds to the most active reproductive period.

Table 2. Age Distribution of TORCH Infections

Age Group (years)	Prevalence (%)
18–24	21.3
25–34	46.8
35–45	31.9

Discussion

The results of the study confirm that TORCH infections remain a significant public health concern in the Andijan region. The high prevalence of cytomegalovirus is consistent with global trends, as this infection is widespread and often transmitted through close household contact [5]. Toxoplasmosis prevalence may be associated with dietary habits, contact with domestic animals, and environmental factors [6].

Although rubella vaccination coverage has improved in recent years, sporadic cases of infection indicate the need for continuous monitoring and booster immunization strategies [7]. Herpes simplex virus infection, which often remains latent, poses a risk of reactivation during pregnancy and childbirth [8].

Early diagnosis and preventive screening before pregnancy are essential to reduce the risk of congenital infections. Educational programs aimed at women of reproductive age can significantly contribute to lowering infection rates [9].

Conclusion

The findings of this study demonstrate that TORCH infections remain a relevant public health issue among women of reproductive age in the Andijan region. The relatively high prevalence of cytomegalovirus and toxoplasmosis indicates ongoing exposure to these pathogens and highlights the persistence of risk factors associated with everyday social, environmental, and household conditions. Although rubella immunity appears to be largely maintained due to vaccination programs, the detection of acute cases emphasizes the need for continuous epidemiological monitoring.

The results underscore the importance of integrating routine TORCH screening into preconception and early prenatal care, particularly for women aged 20 to 35 years, who represent the most active reproductive group. Strengthening health education initiatives aimed at improving awareness of transmission routes, preventive behaviors, and the significance of early diagnosis could contribute to a reduction in adverse pregnancy outcomes.

Overall, the study provides valuable regional data that can support evidence based public health planning and the development of targeted preventive strategies. Further prospective studies involving larger populations and more detailed risk factor analysis are recommended to enhance understanding of TORCH infection dynamics and to improve maternal and neonatal health outcomes in the Andijan region.

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