Pak. j. life soc. Sci. (2025), 23(1): 7346-7348 E-ISSN: 2221-7630;P-ISSN: 1727-4915

Pakistan Journal of Life and Social Sciences

www.pjlss.edu.pk

https://doi.org/10.57239/PJLSS-2025-23.1.00570

RESEARCH ARTICLE

Investigation of Congenital Toxopasmosis in Children Under Five Years Old in Thi-Qar Province / Iraq

Sara Kareem Shalal*

Thi-Qar Education Directorate, Thi-Qar, Iraq

ARTICLE INFO

Received: Jan 15, 2025

Accepted: March 3, 2025

Keywords

Congenital

Toxoplasmosis

Toxoplasma Gondii

IgM Antibodies

***Corresponding Author:**

sara.kareem@utq.edu.iq

ABSTRACT

Connatural toxoplasmosis (CT) is a peculiar form of infection with Toxoplasma that is characterized by either a mild or severe presentation in newborns. This disease continues to be of great concern to pediatricians and gynecologists in terms of treatment. In this article, we aimed to outline the main aspects of the disease and address its prevalence among children suspected of the disease in children's hospitals in Thi-Qar Governorate. The study sample included 110 blood samples from suspected children in Bint Al-Huda Hospital and Al-Haboubi Children's Hospital over a year. Using the ELISA method that involves the enzyme linked to antibodies, 29% of the participants had toxoplasmosis-specific IgM antibodies. The investigations, to date, have not provided a satisfactory answer. Blind, randomized controlled experiments would have to occur, but this is impossible because of the ethical concerns associated with it. The investigation suggests that increased awareness, early detection, and treatment of congenital, infectious, and metabolic disorders should be increased.

INTRODUCTION

Toxoplasmosis is a indicative parasitic disease that is present in both animals and humans globally. *Toxoplasma gondii (T.gondii)* is a bacteria can only grow in living cells if they follow a complex reproduction cycle that includes multiple stages of reproduction. Its life wheel begins with the reproduction of the intimate form, which is hosted by the primary host. It then moves to other species, such as birds and humans, where it reproduces asexually through division. This dual mode of reproduction allows the bacteria to spread and survive across different species of host. (1).

The human infections are probably caused by the inhalation of oocysts that are expelled by cats, these oocysts are either soil-based or water-based, or the consumption of undercooked meat that is infected with oocysts, this may lead to serious effects in children, newborns., and patients that have an immunocompromising condition. (2)

Many human diseases, with this bacterium, are symptomatic, however, a small number of cases present with malaise, a low temperature, and lymphadenopathy. The immunocompromised enduring may sensation pain that is severe, life-threatening. (3) . The parasite's transmission from mother to child is limited to the first time the infection is acquired during pregnancy; after that, the transmission is limited to the child. Infection may be transferred to the baby via the placenta or while the vaginal, natality (4).

Inveterate, toxoplasmosis (CT) can either take a mild or severe form in children. Many corresponding ailment with congenital infection are present, these symptoms include fetal hydrops, perinatal death, minor gestational ages, preterm birth, peripheral symptoms, retinal injuries, consistent yellowing of the skin, mild leukopenia, cerebro-spinal fluid, and the typical trio of Chioretinitis, Hydrocephalus, also the normal Triad of Chioretinitis., and intelligent. calcifications Retinal disease may only affect one side of the retina and exhibit a stationary, recurrent pattern during maturity that typically results in a severe loss of sight. (5).

METHODS

In this research, blood was gathered for 110 children that visited Bint Al-Huda, the blood donation pool at the hospital, and for 60 children that visited Al-Haboubi's Children's Hospital, These children were considered suspect due to any of the following: Jaundice, hepatosplenomegaly, rash, inveterate malformations, hearing or ophthalmological issues, irregularity, and multiple CNS symptoms like seizures, or a tardy return to the anniversary. The effectiveness of the serum sampling proceeding was evaluated for toxoplasma-specific IgM, antibodies, by utilizing commercially available IgM-based ELISA's, kits (Bioactiva, Germany). The instructions from the manufacturer specify that 1.5-3 ml of blood must be gathered, the sampling are then placed in a sterile container that concede for the formation of a clot at a temperature of room, for a period of 0.5 hours, then centrifuged, at 1500 revolutions per minute, (rpm) for 5 minutes. All sera were kept in a contraption that was -20 degrees Celsius in order to prepare for testing. The sample was considered positive when the ratio was greater than 1.1, and it was considered negative when the ratio was less than 0.9 for antibodies against IgM.

RESULTS

Table 1: Gender of children in whole samples

Gender	No.	%
Males	50	45,454
Females	60	54,545
Total	110	100

Table 2: Age distribution of children in whole samples

Age	No.	%
<1	29	26,363
1-2	30	27,272
2-3	20	18,181
3-4	16	14,545
4-5	15	13,636
Total	110	100

Table 3: Prevalence of toxoplasmosis-IgM antibodies

Finding	No.	%
toxoplasmosis-IgM -ve	78	70,909
toxoplasmosis-IgM+ve	32	29,090
Total	110	100

Table 4: Distribution of toxoplasmosis-IgM+ve, according to age

Age	Toxoplasmosis-IgM+ve	%
<1	9	28,125
1-2	7	21,875
2-3	7	21,875
3-4	6	18,75
4-5	3	9,375
Total	32	100

DISCUSSION

Immunogloulin, M antibodies may appear prior to the typical antibody response, their decline is also slower than that of IgG antibodies, IgM antibodies have been frequently used for the investigation of acute infection, and are used to determine if a pregnant woman is contaminated during the maturation period or anterior to envisaging..

Toxoplasma-IgM Positive Abs, in this study, were considered to constitute 29% of children, it was believed that they had a congenital infection (table 3). The percentage of offspring with this antibody was maximum in the younger age bracket, and decreased as age increased. These findings were more significant than the previously recorded results, studies like this one found 15.9% of the children to have toxoplasma, IgM Abs, according to a study in Al-Alwyia, a hospital in Baghdad that was promulgated in 2005 (6) and 5% of the infants that were considered to have a congenital infection,

according to a study in Al-Alwyia that was published in 2022 (7). This high figure is primarily derived from the fact that the diagnosis of CT after the first year of life is improper because of the potential for the child to develop infection during the postnatal period (8). A meta-study from 2019 reputed that toxoplasma-IgM was present in 4.1 rate of Iranian newborns, while another meta-study from 2012 reported that toxoplasma-IgM was present in 3.02 percent of children. A previous study from Al-Nasiriya- Iraq evaluated the frequency of IgG antibodies to (toxoplasmosis, rubella, cytomegalovirus, and herpes simplex, virus) in children who had chronic jaundice as children (11). These antibodies are of the IgG isotype, which is associated with antibodies that are passed down from parent to child, rather than those that are created by the child during infection (12).

CONCLUSION

It's advised that pregnant women should be monitored on a regular basis and frequently for signs of TORCH infection. Additionally, increased knowledge of these congenital diseases, as well as the symptoms of these diseases, is recommended in order to recognize the disease early on and receive treatment for it.

REFERENCES

Mc CARTHY M. Of cats and women. Br Med J (Clin Res Ed) 1983; 287(6390): 445-446.

Cook AJ. , Gilbert RE. , Buffolano W., Zufferey J., Petersen E., Jenum PA., Foulon W., Semprini AE. , and Dunn DT. Sources of toxoplasma infection in pregnant women: European multicentre case control study. Br Med J 2000; 321(7254): 142-147.

Remington J., Mcleod R., THULLIEZ P, Desmonts G. TOXOPLASMOSIS. IN: REMINGTON JS, KLEIN JO, EDS. Infectious diseases of the fetus and newborn infant. Philadelphia; WB Saunders; 2001.

Koppe JG., Loewe-Sieger DH., DE Roever-Bonnet . Results of 20-years follow -up of congenital toxoplasmosis. Lancet 1986; 1: 254-260.

Serranti D., Buonsenso D., Valentini P. Congenital toxoplasmosis treatment . European Review for Medical and Pharmacological Sciences . 2011; 15: 193-198

Abed BK, Al-Saadi AA, Raham TF, Ghaib AJ. Toxoplasmosis in the children who afflicted with congenital deformities and chronic diseases. Al-Qadisiyah Medical Journal. 2015;11(19):211-8.

Tareef F R., Ahmed N A., Zainab A C. Prevalence of Congenital Toxoplasmosis and Congenital Rubella among Suspected Infants in Baghdad . Al-Kindy College Medical Journal 2022:18 (3).

Pomares C., Montoya JG. Laboratory diagnosis of congenital toxoplasmosis . Journal of clinical microbiology. 2016 Oct;54(10): 2448-5

Sarvi S, Chegeni TN, Sharif M, Montazeri M, Hosseini SA, Amouei A, Hosseininejad Z, Anvari D, Saberi R, Gohardehi S, Daryani A. Congenital toxoplasmosis among Iranian neonates: a systematic review and meta-analysis. Epidemiology and health. 2019; 41.

Galvan-Ramírez M, Troyo-Sanroman R, Roman S, Bernal-Redondo R, Vázquez Castellanos JL. Prevalence of toxoplasma infection in Mexican newborns and children: a systematic review from 1954 to 2009. International Scholarly Research Notices. 2012; 2012.

Fayad AN. Detection of neonatal jaundice and relationship with (TORCH) infections as a prolonged disease factor in Al-Nasiriya province. J Coll Educ Pure Sci. 2018;8(2):1-2.

Niewiesk S. Maternal antibodies: clinical significance, mechanism of interference with immune responses, and possible vaccination strategies. Frontiers in immunology. 2014 Sep 16;5: 446.