

Toxoplasmosis of pregnant women in Hawija district, Kirkuk governorate

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Abstract

Study Objectives:

Considering the importance of the parasite in terms of health and what pregnant women are exposed to, especially when it is transmitted from the mother to the fetus.

The idea of the current study came, which aimed at the following:

- 1- Epidemiological and serological study of this parasite in pregnant women for the year 2022 in Hawija district for age groups from 20 to 43 years and its relationship to infection with Toxoplasmosis.
- 2-Diagnosis of parasitic infection in the sera of pregnant women infected with toxoplasmosis, rubella virus and cytomegalovirus through a device known as Mini vidas, one of the important devices for examining hormones and IgG IgM viruses in scientific laboratories.
- 3-Knowing the seropositive percentage of antibodies to Toxoplasma parasites.
- 4-Knowing the percentage of seropositive antibody to hyperplasia of cells. Cytomegalovirus
- 5-Knowing the seropositive percentage of antibodies to the German measles virus, Rubella Virus.

Key words: - epidemiological and serological study; Toxoplasma gondii ; Determine the percentage of infection.

1- Introduction

Toxoplasmosis is a human disease caused by infection with the Toxoplasma Intracellular parasite. It is a protozoan, single-celled parasite that lives inside the cells of the body. gondii obligate. It initially invades the retinal endothelial cells in the blood system, where it multiplies inside, so it is called endozoite. Through it, it spreads to the rest of the tissues (cells), especially the nervous tissue, such as the eye and muscle tissue. Toxoplasmosis is characterized by its ability to move quickly and actively and penetrate the members of the affected host. Where it multiplies within different tissues and organs (1). This parasite was discovered by two scientists (Nicolle and Manceax 1908) in the rodent *Ctenodactylus gundi* living in North Africa (2). Since that time the parasite has been discovered in many warm-blooded animals (3). Domestic cats and other carnivores of the feline family play the role of the ultimate or main provider. While mammals, birds and humans are considered intermediate hosts for this parasite. Infection with this parasite spreads all over the world, with a rate ranging between 30-60% in different countries (4). The prevalence of infection increases in warm and humid areas, while it decreases in cold and dry areas. The infection of the parasite also increases in people who are constantly in contact with soil and who eat undercooked meat (5). The rate of infection varies from one country to another according to the geography of the region, the nature of the weather, health awareness, social habits, lifestyle and lunch of these peoples. On the other hand, it is more common in patients who suffer from immunodeficiency diseases such as AIDS (6). As well as those who take immunosuppressive drugs such as tumors, organ transplants and orthopedic diseases (7).

Epidemiology:

Toxoplasmosis is one of the most widespread diseases in humans and animals in the world. Its prevalence ranges between 16-80% (1). It results in many physical economic losses if it appears in an epidemic form in animals (2). Antibodies were found in more than a million people in 1972. In 1923 the first case of congenital malformations (hydrocephalus) in children was recorded in 1939, when the first human infection with toxoplasmosis was discovered (3). People are affected by this disease at all ages. Immunological studies show that people all over the world have antibodies to Toxoplasma gondii (4). The serological survey of Toxoplasma gondii parasite showed that 80% of the infected cases do not show symptoms of disease, as a result of the efficiency of the immune system (5).

2- Materials and working methods

Direct Methods

The parasite is directly detected in the patient's sample by examining a smear taken from body tissues or body fluids or through tissue sections after staining with Giemsa stain and the parasite is investigated (1).

Indirect Methods

Skin Test

This test was first described in 1938 by Frenkel. This test is called Delayed Hypersensitivity Test (DHT), and it is useful in screening tests, but not useful in diagnosing acute infection (1).

Laboratory Tests for Mini Vidas

The French-made Mini Vidas is one of the important devices for examining hormones and viruses in scientific laboratories. It is used to perform many laboratory tests, as follows: Allergy tests (food, children, respiratory), autoimmune diseases, immunofluorescence, cancer markers, early AIDS P24, viral analyzes, hormonal analyzes, parasitic analyzes, stomach germs, Torch K AIDS.

2.1 action steps

1_ The serum is placed in a strip called a strip. This strip contains 10 holes, which are as follows:

- 1 = Sample well
- 2, 3, 4, 5 = Empty wells
- 6 = Conjugate well
- 7, 8, 9 = Wash buffer
- 10 = Substrate

The second component is a small conical tube that acts as a straw called a SPR.

2_ The SPR contains the anti-antibody, which suctions the serum in the first hole, and the antigen in the serum reacts with the antibody in the hole 6 that binds with the enzyme.

3_ Not all molecules interact, so the spr sucks the wash solution from one of the pits (7, 8, 9) and returns it to one of the empty pits (2, 3, 4, 5) in order to keep only the antigen & antibody attached to the spr. This process is repeated several times and we have antibody + conjugate enzyme in the sixth hole.

4_ The unreacted congee is removed by the washing solution by suctioning it from one of the pits and then returned to the empty pits.

5_ There is a fluorescence substrate in the last hole

6_ We have in the spr an antigen interacting with an enzyme linked to an antibody, and in the last hole we have a fluorinated substance.

7_ The components of the SPR interact with the fluorinated substance, so that only the enzyme associated with the substrate remains in the measuring cell, then the flash lamp is shed. According to the phosphor light theory, these particles take 370 energy and emit 450 energy, which is recorded by the device in the form of the results of the analyzes, and here the analysis ends.

3- Results

Table 1: Percentages of seropositivity for antibodies to *Toxoplasma gondii*

Group	No.tested	No.positivi		%Seropositivity	
		IgG	IgM	IgG	IgM
Study group	35	13	1	37.1	2.9

An interaction occurs between *Toxoplasma* and the immune system and results in an immune response that does not completely eliminate the parasite, but reduces the severity of infection and changes the form of the surface antigens of the parasite (2). The immune response produced against *T. gondii* is cellular and humoral (antibodies). This response is formed against *Toxoplasma gondii* due to the intracellular Bradyzoite (3). The immune response appears in the form of IgM antibodies, then IgG forms after a while. These antibodies increase in height within 6-8 weeks, then decrease until the IgM antibody disappears after about 8-10 weeks. As for IgG antibodies, they remain in the blood for long periods of up to several years. There are two types

of IgG antibodies, one of which leads to the stabilization of the complement and the other does so as well. The characteristic of IgG antibodies that prove the complement is that it disappears quickly after appropriate treatment is given to the patient (1).

Table 2: Percentages of seropositivity for antibodies to Rubella Virus

Group	No.tested	No.positivi		%Seropositivity	
		IgG	IgM	IgG	IgM
Study group	35	20	0	57.1	---

German Measles or Rubella

It is a contagious disease caused by the German measles virus, and it does not cause the child more inconvenience than the common cold. The incubation period for the virus after it enters the body lasts from 14 to 21 days and is usually 18 days. Then the symptoms of the disease begin to appear, such as high body temperature during the first two days, and the glands located behind the ears and around the neck may swell, and the rash appears on the first or second day and consists of flat red spots in the face area. Then it spreads quickly to all parts of the body and all symptoms disappear on the fourth and fifth days. The patient is contagious from one week before the rash appears to four days after its appearance. The person acquires permanent immunity after recovering from the disease. Rubella is less common than measles and does not cause any epidemic, but it carries the risk of encephalitis in very rare cases. The most common effect in adults who contract German measles is swelling and stiffness of the joints. Rubella patients do not need special treatment, but this disease may affect the fetus while it is in its mother's womb (the child was born deformed, suffers from heart disease, loses sight or hearing, or is delayed in his mental and physical development, etc.). Therefore, pregnant women should avoid contact with a person infected with German measles to avoid infection.

Table 3: Percentages of seropositivity for cytomegalovirus antibodies

Group	No.tested	No.positivi		%Seropositivity	
		IgG	IgM	IgG	IgM
	35	29	3	82.9	8.9

Cytomegalovirus (CMV):

It is a common virus. Once infected, your body retains the virus for life. Most people do not know they have CMV because it rarely causes problems in healthy people. Women who develop an active infection with the virus during pregnancy may contribute to transmitting the virus to their children, who may develop symptoms later on. For people with weak immune systems, especially people who have had an organ, stem cell or bone marrow transplant, CMV infection may be fatal.

_ CMV is transmitted from person to person through body fluids such as blood, saliva, urine, semen and breast milk. There is no cure for this virus, but there are medicines that can help treat symptoms.

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