

Prevalence of toxoplasmosis in renal infections patients in Al-Muthanna province/ Iraq

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Abstract

This study aimed to investigate the prevalence of anti-*T. gondii* antibodies in hemodialysis patients with chronic renal failure and patients with urinary tract inflammation by using On site IgG/ IgM and ELISA IgM from November 2012 to February 2013. Anti-IgG and IgM *T. gondii* antibodies positivity were found to be 13.04% and 1.09% respectively by using On Site IgG, while there were no IgM antibodies by using ELISA. The significant effect of age, sex and type of infection wasn't observed in proportion rate, highest rates was in 1-10 years old group, while lowest at 31-40 years and ≥ 51 years while anti IgM antibodies found only in 21-30 years old. Proportion rates of IgG in female more than in males which were 13.9% and 13.04% respectively, while the rates of IgM2.2 in male only. Proportion rates of IgG in urinary tract inflammations patients more than in renal failure patients who were 14.6% and 11.4% respectively, while the rates of IgM 2.1% in urinary tract inflammations patients only.

Key words: Toxoplasma, renal infection, prevalence, hemodialysis.

مدى انتشار داء المقوسات لدى مرضى الجهاز البولي في محافظة المثنى – العراق

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الخلاصة

هدفت هذه الدراسة الى تحديد انتشار الاجسام المضادة لطفيلي مقوس غوندي *Toxoplasma gondii* في المرضى المصابين بالتهابات المجاري البولية او الفشل الكلوي والذين يجرون الغسل الكلوي باستخدام اختبار Onsite IgG/IgM واختبار الاليزا IgM للمدة من تشرين الاول 2012 الى شباط 2013 واخذت العينات من مستشفى السماوة العام. حددت الاجسام المضادة IgG و IgM في 13.4% و 1.09% على التوالي باستخدام فحص Onsite ولم نجد الاجسام المضادة باستخدام فحص الاليزا IgM. لم نلاحظ اي تأثير معنوي للعمر او الجنس او نوع المرض على نسب تواجد الاجسام المضادة لطفيلي المقوسات وكانت اعلى نسبة تواجد عند الفئة العمرية 1-10 سنوات واقلها عند الفئة العمرية 31-40 سنة و 51 سنة فما فوق بينما تواجدت الاجسام المضادة IgM عند الفئة العمرية 21-30 سنة فقط. نسبة تواجد IgG في النساء اعلى منها في الذكور اذ بلغت 13.9% و 13.04% على التوالي. بينما IgM تواجدت في الذكور فقط بنسبة 2.2%. نسبة تواجد IgG في الاشخاص المصابين بالتهابات المجاري البولية اعلى منها في الاشخاص المصابين بالفشل الكلوي اذ وصلت الى 14.6% و 11.4% على التوالي بينما IgM تواجدت في الاشخاص المصابين بالتهابات المجاري البولية فقط بنسبة 2.1%.

الكلمات المفتاحية: توكسوبلازما ، الاصابة الكلوية ، مدى الانتشار ، الغسل الكلوي.

Introduction

Toxoplasmosis is a cosmopolitan zoonotic disease caused by the parasitic protozoan *Toxoplasma gondii* (1). This parasite is an obligate intracellular organism that is found in two forms in humans. The actively proliferating tachyzoites are usually seen in the early, more acute phases of the

infection. The resting forms or tissue cysts are primarily found in muscle and the brain, probably as a result of the host immune response (2). This infection can be acquired through the eating of raw or undercooked meat containing tissue cysts or by exposure to soil, food, or water contaminated with

oocysts excreted in the feces of cats or other felines infected with the parasite. The infection can also be transmitted vertically from an infected woman to a fetus during pregnancy(3, 4, 5).

Materials and methods

The study included 92 blood samples were collected from renal infected patients from delivery hospital in Al-Muthanna province for 4 months. Clinical data about these samples included: Case history, name, age, sex, type of renal symptoms (failure or inflammation) and contact with animals.

Serological test:

Samples were collected in a hospital laboratory by medically trained staff by using a sterile syringe to collect blood was undertaken from a vein in plain tube and centrifuged to obtain serum and frozen at -20 C ° for longer storage.

We carried out two types of tests which are 1-On Site Toxo IgG/IgM rapid test – Cassette (serum/Plasma) for detection of antibodies to *T. gondii* on 92 patients. Manufactured by CTK Biotech, Inc. PI-R0233C Rev.G.

2-For 92 of the participants, specifically anti-*Toxoplasma* IgM antibody testing was done using an enzyme-linked immunosorbent technique. A commercial IgM ELISA kit (ACON Laboratories, Inc. 10125 Mesa Rim Road San Diego. CA 92121. USA) was used for detection of anti-*Toxoplasma gondii* IgM antibodies. The technique was performed according to the manufacturer's instructions. The data of research were analyzed by Chi square according to Rocco and James (2005) (6).

Results

Anti-*Toxoplasma* IgG and IgM antibodies were found in 13.04% and 1.09% respectively by using On site test while by using of ELISA test there were no IgM antibodies (table 1).

Table 1: Number and proportion of toxoplasma infections.

Type of test	No. of examined samples	No. of infected samples	Proportion of infected samples(%)
On Site(IgM)	92	1	1.09
On Site(IgG)	92	12	13.04
ELISA(IgM)	92	0	0

By using On Site IgG, significant effect of age wasn't observed on proportion rate under $P < 0.05$, highest infection rates was in 1-10years old group, while lowest at 31-40 and ≥ 51 years old groups while anti IgM antibodies found only in 21-30 age group (Table 2).

Table 2: Effect of age on toxoplasma infections by using On Site test (IgG/IgM)

Age groups(years)	No. of examined samples	positive samples to IgG test		positive samples to IgM test	
		No.	%	No.	%
Less than 1 year	4	-	-	-	-
1-10	4	1	25	-	-
11-20	7	1	14.3	-	-
21-30	19	3	15.8	1	-
31-40	33	4	12.1	-	-
41-50	14	2	14.3	-	-
≥ 51	8	1	12.5	-	-

Proportion rates of IgG in female more than from males which are 13.9% and 13.04% respectively, while the rates of IgM 2.2% in male only. The significant effect of sex wasn't observed in proportion rate under $P < 0.05$ (table 3).

Table 3: Effect of sex on toxoplasma infections.

Sex	No. of examined samples	Infected samples by using On Site test (IgG)		Infected samples by using On Site test (IgM)	
		No.	%	No.	%
Male	46	6	13.04	1	2.2
Female	43	6	13.9	0	-

Table 4: Number and proportion of toxoplasma infections according to type of renal infection.

Type of infection	No. of examined samples	Infected samples by using On Site test (IgG)		Infected samples by using On Site test (IgM)	
		No.	%	No.	%
Urinary tract inflammations	48	7	14.6	1	2.1
Renal failure	44	5	11.4	-	-

Proportion rates of IgG in Urinary tract inflammations patients more than in Renal failure patients who are 14.6% and 11.4% respectively, while the rates of IgM 2.1% in

urinary tract inflammations patients only. The significant effect of type of infection wasn't observed in proportion rate under $P < 0.05$ (table 4).

Discussion

Toxoplasmosis is an opportunistic protozoan parasite infection, widespread in humans and animals and emerges as a life-threatening risk in immunocompromised individuals (7). Uremic patients are affected with suppressed cellular and humoral immune responses (8, 9). It has been suggested that because of reduced circulating T-cells and increased suppressor cells, then hemodialysis cannot return the impairment of the immune status in CRF (10). These factors probably contribute to the acquired immune suppression in uremia and the high incidence of infection among dialysis patient, in that infection is very common and the major cause of death, of end-stage renal diseases

(11). The prevalence of anti-Toxoplasma IgG antibodies in the present study was less than the results of (12, 13) and (14) studies, also in this study 1.09% rate of anti-IgM *T. gondii* antibodies and had an acute infection which is less than (12) and (14), while similar to (15). These differences may be due to the prevalence of toxoplasma infection in different populations (16, 17). In renal infections, the highest rates of IgG antibodies at 1-10 year old group then decreases with progress of age and refers that immune system develop with increase of age and toxoplasma is an opportunistic parasite (7).

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