

دراسة مدى انتشار داء المقوسات القنڊية عند مرضى الفشل الكلوي المترددين على مركز أمراض الكلى بمدينة الزاوية

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ملخص البحث:

انتشاره بين مرضى الفشل الكلوي في

المدينة.

لقد تم جمع عينات الدم من مرضى الفشل الكلوي المترددين على مركز أمراض الكلى بالزاوية بواقع 3 مل من الدم الوريدي لكل مريض لـ 50 عينة عشوائية بعد تعبئة الاستبيان الخاص بكل مريض، وقد اعتمدنا الفحص المصلي (EISA) فحص الامتزاز المناعي المرتبط بالإنزيم، بما أن هذا الاختبار يكشف عن الاضداد المناعية IgG -IgM ، وهي عبارة عن أجسام مضادة تساعد على الحماية من الأجسام الغريبة.

وقد تبين بعد إجراء الاختبار أن هناك فرق بين العينات حسب نوع الأضداد، بأن وجد ضد IgG سجل أعلى نسبة ظهور، والتي بلغت 32% مقارنة بالضد IgM والذي سجل نسبة 6% في حين كانت IgM-IgG غير موجودة في الفحوصات

إن هذه الدراسة توضح مدى انتشار داء المقوسات القنڊية gondii Toxoplasma عند مرضى الفشل الكلوي المترددين على مركز أمراض الكلى في مدينة الزاوية.

داء المقوسات هو مرض يسببه طفيل المقوسات القنڊية، الذي يعد أحد أهم الأمراض الطفيلية المشتركة بين الإنسان والحيوان، إجباري التطفل وضمن خلوي، ومن المشاكل الصحية التي يسببها للإنسان التشوهات الخلقية للجنين والإجهاض، كما يصيب الجهاز العصبي فيؤثر على الوظائف الحيوية للمخ، إضافة إلى انخفاض معدل المناعة عند مرضى الفشل الكلوي.

لا توجد دراسة سابقة لنسبة الإصابة بداء المقوسات القنڊية في مدينة الزاوية، لذا تهدف هذه الدراسة إلى تحديد مدى

التي تم إجراؤها لباقي المرضى، وشكّلت ما نسبته 62% من الحالات السليمة. من خلال الدراسة والنتائج الواردة في البحث تبين تأثير الطفيل، وعلاقته بمرضى الكلى، فقد تبين أنّهم أثناء عملية الغسيل ينخفض معدّل المناعة لديهم، فيصبحون عرضة للإصابة بالأمراض الطفيلية من بينها طفيل المقوسة القنديية *T.gondii* . وقد لوحظ مؤخراً عند مرضى الفشل الكلوي الذين يخضعون للزراعة، وبعد تخفيض المناعة لديهم لإتمام عملية الزرع، يحدث لديهم نشاط للطور الساكن *Bradyzoite* داخل الأنسجة، حيث ينشط ويهاجم الأنسجة وبخاصة أنسجة الجهاز العصبي ممّا يتسبّب في الوفاة.

من ذلك نلاحظ أنّه ينخفض معدّل الإصابة بداء المقوسة القنديية مع نشر التوعية الصحية، والتعريف بالمرض، وعلى مرضى الفشل الكلوي الذين هم عرضة للإصابة بداء المقوسات القنديية ينبغي أن يخضعوا لفحص هذا الطفيل قبل عملية الغسيل.

Abstract:

Toxoplasmosis is a disease caused by the parasite of the archer, which is a parasitic parasitism and within the cell that affects humans and animals. There is no previous study of the incidence of this disease in patients with renal failure who visit the Center for Nephrology in the city of Zawia. Therefore, the aim of this study was to determine the prevalence of measles among renal failure patients. In this study a total of 50 serum samples were randomly collected in Oct. 2018 and were tested by immunocompromised enzyme to determine the presence of antibodies of the arched curved antibodies using (ELISA). Taking into account the mobilization of a questionnaire form for all patients, The results indicated that there were % 0.6 , % 0.32 old injury and % 0.62 no injury. We noted that the curved rodent opportunistic baridizoite is still in the tissues and activates with the decline of immunity, which may happen during dialysis. Also, transplanting requires a reduction in the level of immunity for the body to accept the transplanted organ. The study conclude that patients

with renal failure must be aware of this disease as well as undergo a pap smear examination prior to the dialysis periodically.

Keywords: Toxoplasmosis disease, *Toxoplasma gondii*, renal failure, haemodilysis, ELISA Abbreviations:

Introduction

Toxoplasmosis is a zoonotic disease caused by *Toxoplasma gondii*, an obligate intercellular protozoan parasite(1), this parasite is one of the most important protozoa of tissues and one of the most common parasitic infection of human by ingestion of Oocysts shed by cats in the environment (2), *Toxoplasma gondii* a worldwide distributed parasite (3).

Classification of *Toxoplasma gondii* as a following:

Phylum : Ampicomplexa

Class: Conoidasida

Subclass: Coccidiasina

Order: Eucocudnorida

Family: Sarcocystidae

Genus: *Toxoplasma*

Species : *Toxoplasma gondii*

This parasite typically through forms the tachyzoite tissue cysts and oocysis causes contamination, the life cycle of *T.gondii* in cluding domestic cats , all warm-blood vertebrates both

avian an mammalian serves intermediate host .T.gondii has three infections stage : Oocysts, Tachyzoites, and Bradyzoites. However the organism of toxoplasmosis has two distinct life cycle the sexual cycle occurs only among definitive host intestine and the asexual cycle involves cats and other intermediate host (5).

Clinical symptoms of toxoplasmosis are not specific and distinct enough so the diagnosis of human injury is in several ways, the most important one is Enzym Linked Immuno Sorbent Assay (ELISA) (7). It is one of the most frequently used test that used to identify parasitic antibodies IgG-IgM. It's mainly based on the addition of soluble antigens and then add the serum sample where the antigen complex is formed in the presence of antibodies to the parasite in the serum and reveals the complex by the addition of antibodies associated with the enzyme (6). The acute infection can be investigated by detecting the immune antibody IgG, which appears as a result of the immune response to the disease to reach the highest rate within 3-5 weeks of infection. Then begins to

decline until the lower level began from the third month to the year (6)

Materials and methods

The study was conducted on patients with renal failure who were in contact with the center for the treatment of kidney diseases in Al-Zawia city. In this study 50 random samples of patients were selected with a questionnaire for each patient . This questionnaire included some patients information such : Sex, age, social status, place of residence, occupation, the presence of chronic diseases, contact with cats and dogs, exposure to a previous blood transfusion, eat grilled meat that is not cooked well, sources of drinking water, number of dialysis, and prevalence of parasites.

Specimens collection

50 randomized blood samples were collected from patients with renal failure by taking 3ml of intravenous blood per person. After taking the special information in the questionnaire, the samples were placed in plastic tubes (plain tube) free of coagulants for the purpose of separation.

Blood serum separation

The tubes were transferred to the laboratory and inserted into the centrifuge and were at 2500 cycled/minute for 10 minutes for extraction.

Serology test

The serological test performed in this case on blood samples taken from patients is: ELISA, this test was used to detect IgG – IgM antibodies, which are antibodies that help protect against foreign objects.

Testing principle

The serum – containing tubes were placed in the device used by Roch HI TACHI – Cobas e 411 Hormones and the ELISA test was used to detect specialized antibodies. After placing the samples and the test kit in the places assigned to it in the machine, the machine stats the analysis and reads the results automatically.

The samples were examined as following :

- 1- IgG positive: IgM positive: Infection is new.
- 2- IgG negative : IgM negative : Infection did not occur.
- 3- IgG positive : IgM negative : Infection in the past and no active disease.
- 4- IgG negative : IgM positive : Infection a few months ago.

Statistical analysis

Data analysis was performed with computer software (SPSS) the Statistical Package for Social Science. Version 15. SPSS Inc., Chicago, IL). Statistical significance was taken at P-of ≤ 0.05 .

Results

The results of this study recorded 19 cases from 50 patients. the prevalence of T.gondii , both IgG and IgM.

Total tested samples	No. of IgG positive & IgM positive %	No. of IgG positive & IgM negative %	No. of IgG negative & IgM negative %
50	3 (6.0%)	16 (32.0 %)	31 (62.0%)

The seroprevalence of toxoplasmosis in renal patients by the demographic characteristics

Characteristics	toxoplasmosis in renal patients		Old %	New%
	Old infection	New infection		
Age Range 20 – 89 years	16	3	32	0.6
Sex Male Female	10 6	3 0	0.20 0.12	0.6 0.0
Social status Single Married	3 12	0 3	0.6 0.24	0.0 0.6
Place of residence Flat Farmer	4 12	1 2	0.8 0.24	0.2 0.4
Exposure to blood transfusion Yes No	8 8	1 2	0.16 0.16	0.2 0.4
Chronic Blood Pressus Diabetes Both	9 1 3	1 0 1	0.18 0.2 0.6	0.2 0.0 0.2
Occupational injury	16	3	0.32	0.6
Eating grilled meat Yes No	13 3	3 0	0.26 0.6	0.6 0.0
Drinking water sources Pipe/tap Boiled / Filter	4 12	1 2	0.8 0.24	0.2 0.4
Number of dialysis Once Twins 3 times	1 1 14	0 0 3	0.2 0.2 0.28	0.0 0.0 0.6
Contact with cats Yes No	13 3	1 2	0.26 0.6	0.2 0.4

Discussion

The disease is one of the most common parasitic diseases to human and animals, it has recently been noticed that there are wide-ranging medical concerns because of the serious effects on humans as well as the importance of the diseases in terms of public health and countries that concern sheep Barbic.

Toxoplasma gondii parasites characterized by opportunistic infection, especially for the immune system in patients with kidney failure. The study found that there is a clear impact on the immune system in patients included in the study. However; this study is the first of its kind in Al-Zawia city, specifically within the Center for Nephrology. This was clear when asked about the extent of their knowledge of this parasite. Therefore, according to the results of the analysis of ELISA, the type of antibody found has the highest incidence of 32 % compared to IgM antibody, which recorded a 6% incidence rate, while IgG and IgM were not presented when the tests were performed for the other patients with renal failure and accounted for 62%.. Also, the

study showed that there's a relationship between the effect of the parasite and patients with renal failure. This is maybe due to the fact that the immune system functions are disturbed in patients with kidney failure specially during a dialysis and patients become more vulnerable than others to the disease parasitic. This finding is in line with a study conducted in Tunisia in 2006.

rate occur Bradyzoite activity within the tissues where it activates and attacks the tissues, especially the tissues of the nervous system, it has been observed that this causes a decrease in immunity and sometimes lead to death.

Conclusion

This study shows that patients with renal failure are less immune, especially during renal dialysis, and their bodies become more susceptible to parasitic and bacterial infection, hence the parasite takes advantage of reduced immunity and favors attacking the body of the patient with low immunity.

Patients with renal dialysis should therefore be screened for prevent the spread of infection during renal dialysis.

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References

1. Ebrahimzadeh A., Bamedi T., Etemadi S., Shahrakipour M., Saryazdipour Kh. (2013). Toxoplasmosis as a complication of transfusion in hemodialysis patients. Iranian Journal of Pediatric Hematology Oncology Vol4.No1.
2. Veeranoor, N., Teoh, H.L., Rogan, L., Init, I. (2011). Seroepidemiology of Toxoplasmosis in Renal patients. Vol 42 No. 2 March
3. Suleyman, Y., Funda, d., Saban, y., Ozan, y., Bulent, T., Cengiz, U. (2003) Anti-Toxoplasma gondii Antibodies in Haemodialysis Patients with Chronic Renal Failure. Yonsei Medical Journal. Vol 44 No. 2, pp. 288-292.
4. Roberts, L.S., Janovy, J., Gerald, D., Schmidt and Larry, S. (2005). Roberts foundation of parasitology. 7 ed. ISBN 0-07-234898-4.
5. Dudgeon, J.P. (2009). History of the discovery of the life cycle of Toxoplasma gondii, International Journal for Parasitology, 39:877-882.
6. Martin, V., Arcavi, M., Santillan, G., Amendoeira, M.R., Neves, E., Griemberg, G., Guarnera, E., Garberi, J.C. and Angel, S.O. (1998). Detection of human Toxoplasma-specific immunoglobulins A, M, G with a recombinant Toxoplasma gondii Rop2 protein, Clinical and Laboratory Immunology, 5 (5): 627-631.
7. Lee, Y.H., Noh, Hwang, O.S., Lee, S.K. and Shin, D.W. (2000). Seroepidemiological study of Toxoplasma gondii infection in the rural area Okcheon-Gum, Korea, Korean Journal of Parasitology, 38 (4): 251-256.