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Common Risk Factors related Toxoplasmosis Infection during pregnancy

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Abstract:
Back ground: Toxoplasmosis a foremost cause of death recognized to foodborne illness. More than 40 million men, women, and children in the U.S. women newly infected with *Toxoplasma* during or shortly before pregnancy should be alert that toxoplasmosis may have severe consequences.**Objectives:** to assess risk factors of toxoplasmosis among the pregnant women. **Methodology**: A descriptive analytic study was conducted on (100) of pregnant women. Who attending at primary health care centers in AL - Hilla city they have previous or positive test for toxoplasmosis. Data collected for the period of (13thFebruary - 30th July 2019) and; including: characteristics (socio, reproductive); and Risk factors. **Results:** showed that high significant association between demographical variables(age with dietary and hygiene) and significant association between education with dietary and between residence and hygiene) high significant association between reproductive variables(gravid, para with dietary and hygiene) and high significant association between abortion, stillbirth ,visiting health centers with dietary factors .
Conclusion: Pregnant women must be changes some dietary behaviors and also following personal hygiene when contact with meat and vegetables.

Keywords: Risk factors, infection, Pregnancy, intracellular , parasite , Toxoplasma

Introduction

The Toxoplasmosis disease due to intracellular protozoan parasite Toxoplasma gondii, it can caused different syndrome in pregnancy, during prenatal period, acquired infection may result in abnormalities as hydrocephalus, microcephalus, jaundice and hepatosplenomegaly .[1]

Nicolle and Manceaux study they discovered Toxo- plasma gondii in 1908 in Tunisia and Splendore and Brazil, in 1939–1940 toxoplasmosis was documented as a human disease.in1960s defined the lifecycle of the parasite. [2] Epidemiology of *T. gondii* infection in pregnant women was ranged from 9% to 67% in Europe and 92.5% in Ghana. Worldwide, over 6 billion people were infected with *T. gondii*. and there are 20,000 cases of retinal infection and 750 deaths, that mean it is the second common cause of deaths related to food-borne diseases .In Iraq 2016 a study stated that in Al- Najaf and Misan governorates the highest rates of toxoplasmosis prevalence were (20%).[3]

In congenital toxoplasmosis the parasite transmission to the fetus through the placenta when the mother has active infection during pregnancy .The risk depends on the time of infection during pregnancy. Transmission to the fetus is less than 5% when maternal infection occurs before the 12th week of pregnancy.[4] When acquired during pregnancy, it can cause a severe congenital infection with ocular and neurologic impairment to the infant. Up to 38% of women in the United States have immunity against *T. gondii* from a prior infection. This means 62% of women at risk to acquire toxoplasmosis during pregnancy.[5]

Methodology: A descriptive analytic study was conducted on (100) Non probability (purposive sampling) of pregnant women. Who attending at primary health care centers in AL - Hilla city they have previous or positive test for toxoplasmosis . The study carried out from (13thFebruary - 30th July 2019). Data collected through a questionnaire format constructed for the purpose of this study, consists of four part include;(5)items related to socio demographic, (6) related items to reproductive characteristics; and Risk factors for toxoplasmosis, (6) related items to food , and (9) related items to hygiene risk factors. These items are rated according to three level Likert scale (Always, Sometimes, and Never)and scored (3,2,1) **,cut of point of score=2,** Descriptive statistical and Inferential analyses are used to analyze the data.Data were analyzed using the Statistical Package for Social Sciences (SPSS version 20).

RESULTS:

Table (1)Distribution of study sample according reproductive variables. (n=100)

Items	Group	Frequency	Percent (%)
Number of (Gravida)	1-2	69	69
	3-4	24	24
	5&More	7	7
	Total	100	100
Number of (Para)	0-1	15	15
	1-2	60	60
	3-4	20	20
	5&More	5	5
	Total	100	100
Number of abortion	1-2	94	94
	3-4	4	4
	5&More	2	2
	Total	100	100
Stillbirth	1-2	91	91
	2-3	9	9
	5 &More	nill	0
	No dead baby	nill	0
	Total	100	100
Visit the health center	Regular	71	71
	Irregular	29	29
	Total	100	100
Toxoplasmosis test	IgG	75	75
	IgM	25	25
	Total	**100**	**100**

Table (1) shows that the highest percentage of the sample were gravid (69%) ranged (1-2), (60%) of them the number of Para were having (1-2). (94%) of them having (1-2) time abortion was the highest percentage ,(91%) of them were having

still birth (1-2) and they were (71%)of them were visiting health centers regularly and (75%) of the participants were IgG Toxoplasmosis test result.

Table2: Distribution of the study sample according risk factors related to foods.

Items	Group	Frequency	Percent (%)	Mean of score
Eating a freezing meat	**Always**	32	32	**1.9**
	Sometimes	26	26	
	Never	42	42	
	Total	100	100	
Eating uncooked meat	**Always**	7	7	**1.25**
	Some times	11	11	
	Never	82	82	
	Total	100	100	
Drink un pasteurized milk	**Always**	23	23	**1.83**
	Some times	37	37	
	Never	40	40	
	Total	100	100	
Drink un cleaned water	**Always**	5	5	**1.14**
	Some times	4	4	
	Never	91	91	
	Total	100	100	
Eating cheese made by hand	**Always**	55	55	**2.33**
	Some times	23	23	
	Never	22	22	
	Total	100	100	
Eating un cleaned fruit & vegetables	**Always**	2	2	**1.2**
	Some times	16	16	
	Never	82	82	
	Total	100	100	
Total mean of score				**1.6**

Table (2) shows that the lowest mean of score were (1.2) for eating un cleaned fruit & vegetables and the rest and the highest mean of score (2.33) for the item eating cheese made by hand. The total mean of score are (1.6)

Table3: Distribution of the studied responding of risk factors related to hygiene

Items	Group	Frequency	Percent (%)	Mean of score
Contact with soil in the garden without using gloves	**Always**	44	44	2.17
	Some times	29	29	
	Never	27	27	
	Total	100	100	
Dealing with sand piles	**Always**	45	45	2.18

without using gloves	**Some times**	28	28	
	Never	27	27	
	Total	100	100	
Breeding cat at home	**Always**	21	21	1.59
	Some times	17	17	
	Never	62	62	
	Total	100	100	
Cats touch with dishes in the kitchen	**Always**	0	0	**1.1**
	Some times	10	10	
	Never	90	90	
	Total	100	100	
Raise poultry at home	**Always**	30	30	1.89
	Some times	29	29	
	Never	41	41	
	Total	100	100	
Deals with waste without gloves	**Always**	46	46	2.14
	Some times	22	22	
	Never	32	32	
	Total	100	100	
Have good sewage at home	**good**	81	81	2.62
	Just good	0	0	
	bad	19	19	
	Total	100	100	
Wash hands after touching meat	**Always**	80	80	
	Some times	12	12	**2.72**
	Never	8	8	
	Total	100	100	
Wash hands after dealing with vegetables	**Always**	19	19	
	Some times	10	10	1.48
	Never	71	71	
	Total	100	100	
Total mean of score				**1.99***

***Cut of point=2**

Table (3) shows that the low mean of score are (1.1) Cats touch with dishes in the kitchen, (2.72) the highest mean of score for wash hands after touching meat. Also, the total mean of score (1.99).

Table 4: Association of Socio-Demographical Characteristics variables with the Risk Factors. (n=100)

Relationships for Dietary& Hygiene Factors with Demographical variables	Dietary			Hygiene		
	C.C.	Sig.	C.S.	C.C.	Sig.	C.S.
Age Groups	**0.863**	**0.000**	**HS**	**0.844**	**0.001**	**HS***
Educational level	**0.506**	**0.033**	**S**	**0.585**	**0.803**	**NS**
Occupation	**0.239**	**0.535**	**NS**	**0.333**	**0.190**	**NS**
Residency	**0.304**	**0.178**	**NS**	**0.395**	**0.030**	**S**
Economic Status	**0.349**	**0.457**	**NS**	**0.416**	**0.281**	**NS**

(*) HS: Highly Sig. at P≤0.01; S: Sig. at P≤0.05; NS: Non Sig. at P>0.05

Table (4) shows that high significant association between age with risk factors and significant association between education with dietary and residence with hygiene.

Table 5: Association of reproductive variables with the Risk Factors. (n= 100)

Relationships for Dietary& Hygiene Factors with Reproductive variables	Dietary			Hygiene		
	C.C.	Sig.	C.S.	C.C.	Sig.	C.S.
Number of (Gravida)	0.519	0.001	HS	0.655	0.000	HS
Number of (PARA)	0.407	0.006	HS	0.462	0.001	HS
Number of abortion	0.639	0.000	HS	0.431	0.260	NS
Stillbirth	0.687	0.000	HS	0.488	0.261	NS
Visit the health center	0.405	0.141	NS	0.340	0.786	NS
Toxoplasmosis test	0.393	0.008	HS	0.420	0.011	S

(*) HS: Highly Sig. at P≤0.01; S: Sig. at P≤0.05; NS: Non Sig. at P>0.05

Table (5) shows that high significant association between reproductive variables (gravida, para with risk factors . and high significant association between abortion, .stillbirth ,visiting health centers with dietary factors and high significant association between toxoplasmosis test and dietary but only significant association with hygiene .

Discussion:

Abortion was the highest risk among the adverse pregnancy outcomes due to the presence of *Toxoplasma* cysts in chronic infection uteri so, lead to infection of the fetus in the first trimester and often to recurrent miscarriages.[6]

The current study shows the highest percentage of the sample were gravid (69%) ranged (1-2), (60%) of them the number of Para were (1-2). (94%) of them having (1-2) time abortion,(9%) of them have still birth.(71%) they visit the health centers regularly and all pregnant women doing Toxoplasmosis test which was (positive).

The present study showed that the relationship between Toxoplasmosis and rate of abortion. accounts of 173 aborted women between age of ≤20 and 50 years old. *Gondii* antibodies presented in 54(31.2 %) of aborted women. Also 77 (44.5%) of of them were at age group 21-30 years old ,and the anti-toxoplasmosis IgM &IgG found in 66(38.2%)of them.[7]

The study shows that the lowest mean of score were (1.2) for eating un cleaned fruit & vegetables and the rest and the highest mean of score(2.75) for the item eating uncooked meat. The total mean of score are (1.85)

A study stated that freezing meat was more active than the biosecurity intervention. In spite of high freezing costs.[8]

Astudy mentioned that infection caused by the Toxoplasma gondii parasite is usually acquired by eating dairy products, eating infected meat or contacted with the feces of an infected cat.[9] Iraqi women cooked food for enough long time and they sometimes used freezing meat. Finaly, the low mean of score are (1.1) Cats touch with dishes in the kitchen, (2.72) the highest mean of score for wash hands after touching meat. And the total mean of score (1.99).

The ways of obtaining the infection are digestion of tissue cyst in undercooked meat, or raw or interaction with polluted sand or soil with oocyst infected cat feces, or congenitally from the pregnant to the fetus when the first pregnancy .also, significant association of T. gondii seropositivity with eating undercooked meat, poor hygienic practice and drinking untreated water.[10]

Recommendation: the study recommended for Screening for anti-Toxoplasma specific IgG and IgM antibodies in the first trimester of all antenatal women for a preventive measure and early detection and treatment. And mass media education about the preventive measure.

Conclusion

The present study concludes that the prevalence of toxoplasmosis due to rsik factors linked to foods as eating un cleaned fruits and vegetables and the risk factors linked to hygiene as contact with soil , sand and waist in the garden without using gloves .

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Ethical Clearance: Informed consent was obtained and oral permission for agreement from the pregnant women in the interviewing face to face included in this study.

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